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Improved Corn Harvester.

This invention consists in the employment of two scythe-shaped cutters working over stationary cutters, whereby the standing stalks, as the machine is drawn along, are cut at a proper distance from the surface of the ground, and are thrown on to a platform, collected into a compact form, and after being bound by an attendant, are discharged upon the ground.

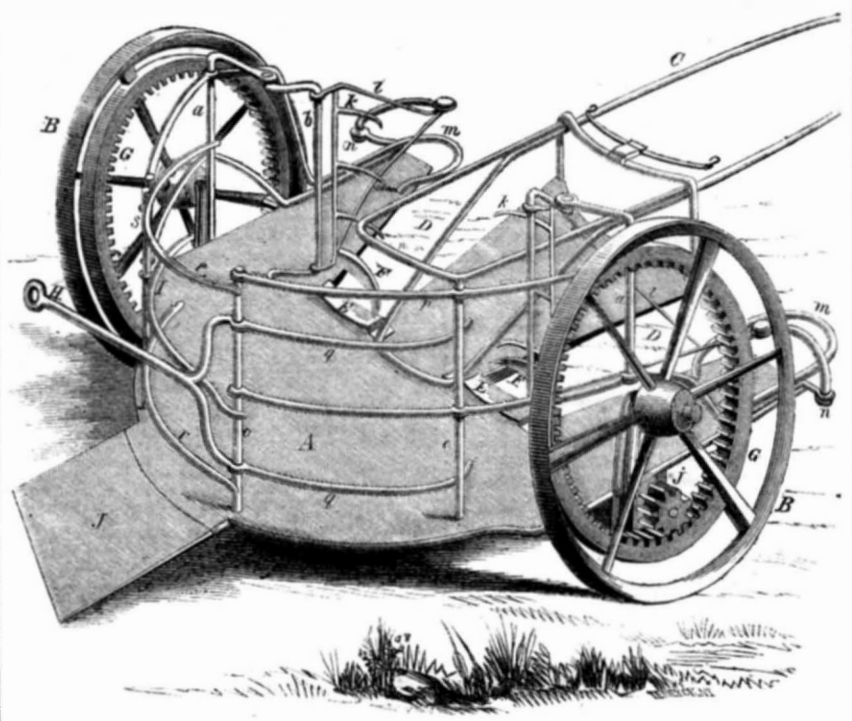
Our engraving is a perspective view of the machine, in which A represents the platform, mounted upon two wheels, B B, and having a pair of thills, C, attached to its front. In the front part of the platform, and at each side of the thills a recess, D, is formed. These recesses are not parallel with each other—their inner ends being nearer together than their outer ones; at the inner end of each recess a stationary curved cutter, E, is attached, and over each of these cutters, E, a scythe-shaped cutter, F, works. The cutters, F, are attached each to the lower ends of two vertical and parallel rods, *b*. The rods, *b*, at their ends, are connected to horizontal arms. The upper arms are fitted in bearings at the upper ends of vertical rods, *a*, attached to the platform, one at each side; and the lower arms are connected with bevel pinions, which are placed underneath the platform, and gear into corresponding pinions, which are rotated by the cog wheel, *j*, that is moved by the toothed rim, G, on the inside of the wheels, B B.

Horizontal arms or teeth, *k*, are attached to the rods that carry F, and these may be slightly curved in form. These rods are connected by bars, *l*, to the inner ends of arms, *m*, their outer ends being fitted and allowed to work freely in bearings, *n*, attached to the platform. The back part of the platform, A, is of curved form, and standards, *o o o*, are attached to it, these standards having horizontal rails, *p*, across them, to form guards. On the back central standard a horizontal bar, H, having two arms, *q q*, is allowed to swing freely, the arms, *q q*, being over the platform, A. I represents a swinging gate, which is attached to another of the standards, *o*, at the back of the platform. This gate is formed by attaching rails, *r*, to an upright, *s*, that is loosely connected by links to one of the standards, *o*, and can swing by their means upon it. J is an inclined plane or drag plate.

The operation of the machine is as follows: As the machine is drawn along, the cutters, F F, are made to work over the stationary cutters, E E, by means of the gearing describing a circle, and the cutters are always kept facing the stalk, by their being allowed to swing loosely upon *b*, and by being held in the one position by the connection, *l m n*. The stalks are cut at the inner parts of the recesses, D, by the cutters, E F. The teeth or arms, *k*, which have the same movement as the cutters, E, pass the stalks on to the platform in an upright position against the standards and rails, *o p*. When a sufficient number of stalks have accumulated at the back of the platform to form a shock, the attendant moves the bar, H, which with its arms, *q*, collects them, and by means of this and the swinging gate they are compressed and bound by the attendant, and passed on to the inclined platform, J, from which they fall on the ground. The gate is then closed, and H brought back until there shall be a sufficient number of stalks to form another bundle.

The inventor is I. V. Adair, of Romulus, N. Y., who will be happy to furnish any additional information. It was patented April 6th, 1858.

ADAIR'S CORN HARVESTER.



DICKEY'S SUGAR CANE STRIPPER.

Fig. 1

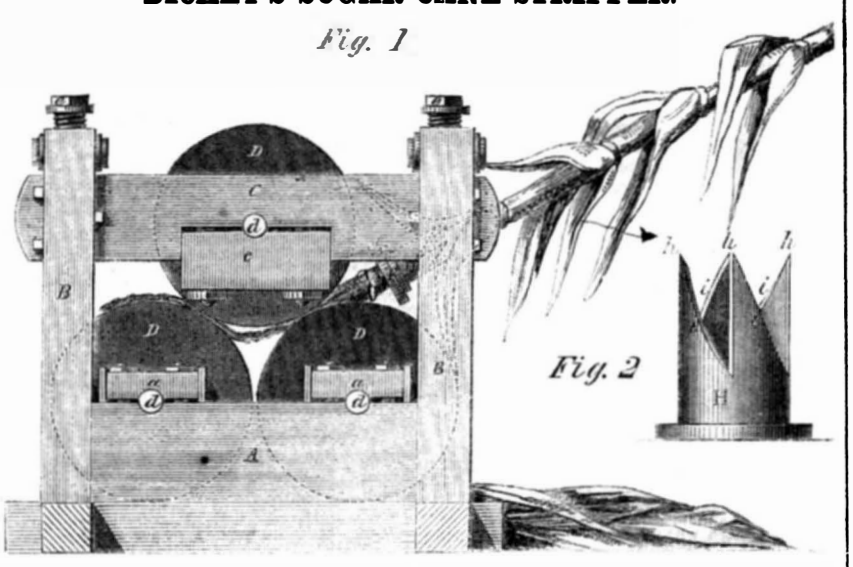


Fig. 2

Before the sugar cane can be crushed in the mill, the canes have to be deprived of their leaves, and this is now done by hand. The invention we are about to describe is intended to supersede the old process, by providing an attachment for sugar cane crushers, which cuts off all the leaves as the canes are passed in between the rollers. The stripper or cutter is very simple, and is shown in Fig. 2, H being a steel tube having inclined cutting edges, *i*, coming to a point at *h*. A series of these are placed on a board, F, in the position shown in Fig. 1, which is a side elevation of the rollers and frame of a sugar cane mill. They are arranged at such an angle as to present the cane, after it has been passed through them, in the proper position for the rollers to grasp it, and so draw the cane through the stripper, leaving the leaves outside, as it passes between the rollers and is crushed.

In Fig. 1, A is the bed on which two of the rollers, D, rotate by axles, *d*, and they are kept in their proper place by boxes, *a*. From A rise two standards, B, connected by a cross-piece, C, from which the upper roller, D, is supported on its axle, *d*, by the box, *c*. This cross-piece, C, can be raised and lowered, so as to bring the rollers closer together or farther apart by the screws, *e*, in the uprights, B.

Stripping or blading cane by hand is a slow, tedious, and disagreeable business, and as the blades have sharp edges, they often cut and lacerate the hand of the operator; all this is prevented by the use of this simple contrivance. The inventor—Calvin Dickey, of Mercersburg, Pa.—has found that they strip the sorghum cane beautifully; and as the growth of this plant seems to be extending, they will, no doubt, be in great demand, for that as well as for the ordinary cane.

Any further information can be had by addressing the inventor as above. Patented March 23, 1858.

Curious Phenomenon in Potter's Field.

A sensation was created some days since in the vicinity of Potter's Field, at the discovery of a body which had undergone a remarkable transformation. The body had laid under three tiers of corpses, says the New York *Evening Post*, and the head and feet had disappeared, while the remaining portion, which was somewhat enlarged above its natural dimensions, presented the appearance of wax of an alabaster whiteness. In short, the whole muscular structure had been changed into the substance known as "adipocere." This is a species of soap formed upon a principle analogous to what is known as "fatty degeneration in livingbodies." The acids of fat (the stearic and margaric) are formed, and combine with ammonia and lime, which are derived from the elements of the body.

Attention was first called to this singular transformation of bodies near the end of the last century, upon the occasion of the removal of the remains from the churchyard of *Les Innocens*, in Paris. The place had been used as a cemetery for centuries. The whole area, occupying about seven thousand square yards, was perceived to have swollen to an elevation several feet above the natural level. On opening the ground, the dead bodies were found, while retaining their shape, to have been transmuted into an unctuous gray substance, and with a peculiar, but not highly offensive smell. They had been deposited in pits about thirty feet deep, capable of holding from twelve to fifteen hundred bodies, and the transformation had taken place according to the length of time they had been deposited. It was most complete in those bodies placed near the center of the pits, which had been buried at least three years. Every part, except the bones, hair, and nails, had been converted into *gras de cemetieres*—a compound adipocere. When the ammonia had been separated, the substance remaining was found, both in its physical and chemical properties, to resemble spermaceti. It is asserted that a wick inserted in a body thus transmuted will burn for many hours.

To Save Gas.

We have received a letter from Mr. J. W. Hoard, of Providence, R. I., in reference to the above subject, alluding to the article on page 313 of the present volume of the SCIENTIFIC AMERICAN. He has made quite a number of experiments to prove whether the best method of regulating the flow of gas to the burners is by the valves at the burners, or the main valve near the meter. The results of these have convinced him that there is a difference of 10 per cent in favor of regulating by the burner valves, leaving the cock near the meter full open. This is a different opinion from that expressed on the page referred to, and which was obtained from one who has devoted much attention to the subject. This is a matter with which Mr. Hoard is well acquainted, as he has long directed the energies of his mind to the inventing of apparatus for regulating the flow of gas to burners.

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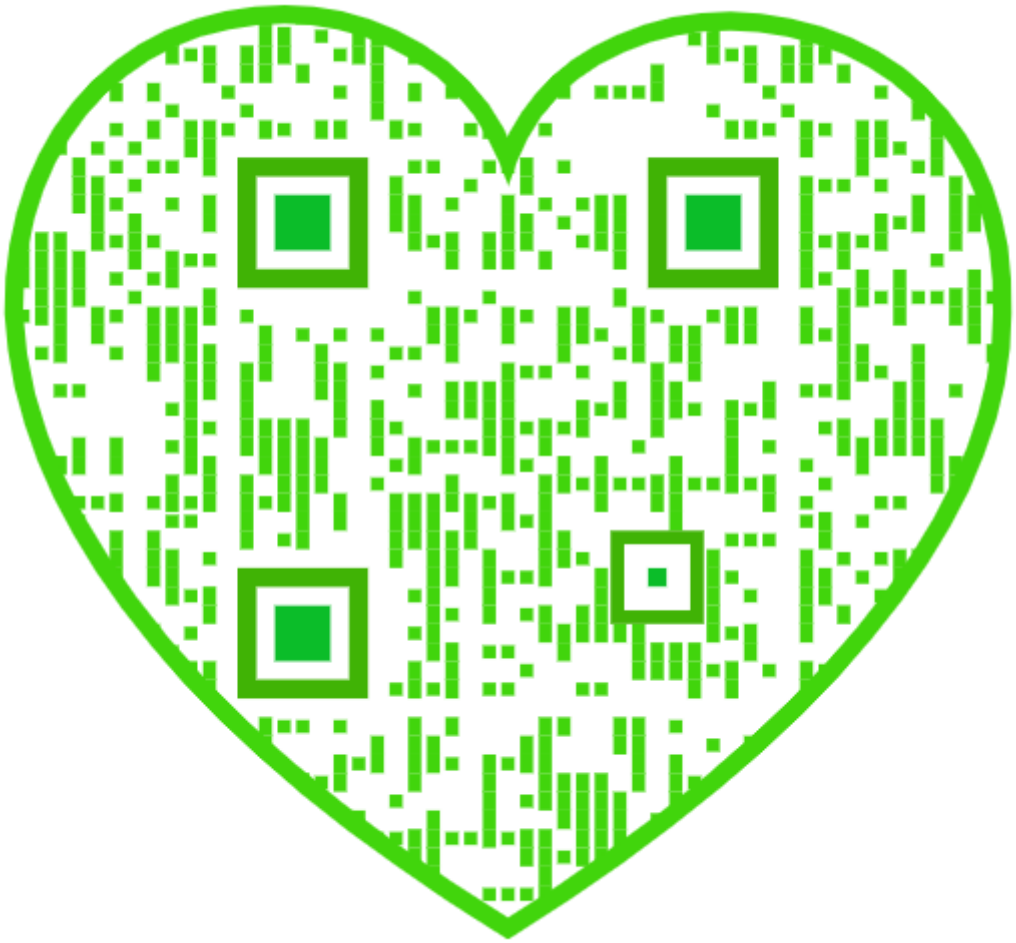

Issued from the United States Patent Office

FOR THE WEEK ENDING JUNE 15, 1858.

[*Reported officially for the Scientific American.*]

APPARATUS FOR MANUFACTURING GAS—John Absterdam, of Boston, Mass. : I do not claim the naphthalizing boxes or contrivances made as described on pages 145 and 146 of Parnell's Applied Chemistry, or any other contrivance similar to them, my invention being different from such contrivances, as I employ for the passage of gas, spiral or serpentine unobstructed passages made of cloth, or any other fibrous or porous material, connected with shallow chambers or reservoirs, or their equivalents.

In carrying out my invention I do not employ a capillary material, which shall so fill the channel or gas passage as to materially obstruct the flow of gas through the same. And furthermore, by my arrangement of the gas passage with reference to each chamber and its leading pipes, I effect such an extended circuit of gas in contact with the vaporizing surfaces as to enable me to bring the whole apparatus into a very small compass, in comparison with others in use, and having the same amount of naphthalizing power.

I do not claim the apparatus made of metal or other suitable material merely, as such solid apparatus is merely the skeleton, to sustain the passages or tubes made of cloth, which line such solid chambers, accurately forming a tubular passage of cloth through which the gas, air, or saturated vapor is driven.

But I claim the arranging of tubular passages made of cloth, or other similar porous fabric, which elevate by capillary action the fluid in the chamber, allowing space sufficient for the passage of the æriform fluid, and allowing complete saturation of the latter, in the manner and for the purpose specified.

DISCONNECTING CAR AXLE BOXES FROM PEDESTALS—William D. Arnett, of Chicago, Ill. : I claim the lugs, recesses, and grooves, arranged with the pedestals and box cases, for disconnecting the box cases from the sides of the pedestals, as set forth in the specifications, and for purposes described.

BRICK MACHINES—Gerard Bancker, of New York City : First, I claim the use of the flanges, Y and Y2, in combination with the feed box, X, and rotating molding plate, C, or equivalents, substantially as described, and for the purposes set forth.

Second, I also claim the use of the air expeller piston Z, in combination with the rotating molding plate, C, and the flange. Y2, or equivalents, actuated simultaneously with the feed box, for the purpose substantially as described.

Third, I also claim in combination with the rotating plate, C, the reciprocating feed box, X, having the flanges, Y and Y2, attached thereto, the bell crank, f 2, pin, k2, on the cam, a2, when these several parts are constructed and operated in the manner and for the purposes set forth.

HOUSE BELL——Jason Barton, of East Hampton, Conn. : I am aware that springs and levers have been previously used and arranged in various ways, to force a tongue or hammer from one point to another, and back again, so as to strike a bell, and hammers also have been forced across the mouth of a bell against two opposite points thereof. I therefore do not claim such devices.

Nor do I claim broadly such operation of the tongue or hammer.

I claim the arrangement of the parts in a house bell, as specified, for the purposes set forth.

[This invention consists in the peculiar arrangement of a spring, lever, tongue or hammer, and handle or rod, placed relatively with each other, and with a bell, whereby the tongue or hammer, as the handle or rod is actuated, is made to move gradually about half the distance of its stroke, and then move the remaining space with an accelerated speed, so as to strike the bell forcibly, the hammer striking the bell at one or at two opposite points, and having the same movement in either direction. There is also a peculiar means for graduating the strength of the spring, and also a peculiar stop, by which the hammer may be made to strike a single or double blow, as desired.]

MACHINE FOR CUTTING GLAZIER'S TINS—John G. Baker, of New Brunswick, N. J. : I claim the rotating drum, M, provided with the cutters, Q R, two or more, in combination with the stationary die or bolster, S, provided with the recesses, f g, and the feed rollers, o, arranged to operate substantially as and for the purposes set forth.

[A notice of this invention will be found on another page.]

MACHINE FOR GATHERING THE TOLL IN GRIST MILLS—Joseph Bartholomew, of Dundee, N. Y. : I do not confine myself to the precise arrangement of the parts as shown and described, for a modification of the same may be used and made to answer a good purpose ; the valves, for instance, may be operated by a different arrangement of parts, &c.—the machine, however, would be substantially the same as regards its principle of operation.

What I claim is the employment or use of a rotating cylinder provided with chambers, and having valves or movable bottoms so arranged and operated that as the cylinder rotates the grist will be conveyed to the hopper of the stones, or any proper receptacle, and the toll gathered or taken from the grist, substantially as described.

[A notice of this improvement will be found in another column.]

APPARATUS FOR MANUFACTURING GAS—William Beaumont, of Paterson, N. J. : I claim, in combination with the retort, the series of longitudinal flues, H J K, and their communicating passages, g m n, when arranged substantially as described.

MACHINES FOR CRUSHING STONES—Eli W. Blake, of New Haven, Conn. : I claim the combination of the following features in the construction, arrangement and movement of the jaws, to wit :

First, Making the acting faces of the jaws upright, or so nearly so that stones will descend by their own gravity between them.

Second, Making the acting faces of the jaws convergent in such manner that while the space between them at the top is sufficient to receive the stones that are to be broken, that at the bottom shall be only sufficient to allow the fragments to pass when broken to the required size.

Third, Giving a short vibratory movement to the movable jaw.

I disclaim the above three features severally, and limit my claim to their joint co-operation, as described, in a machine for breaking stones, or other hard substances.

ATTACHMENT OF PIPES TO WATER-CLOSET BASINS—William S. Carr, of New York City : I claim the socket, d, rod, e, and nut, f, connecting the pipe, c, and arm b, substantially as and for the purposes specified.

QUILTING FRAME—Alanson Brown, of Rochester, N. Y. : I claim the construction of the frame, A A B B B C, and its combination with the standards, S S, said frame consisting essentially of the revolving bars, B B, the end pieces, A A, and the rigid bar, C, which bar, C, revolves in the standards, S S, in the manner and for the purpose substantially as described.

I also claim my method of converting the whole into a cradle by means of the reversible feet, F F.

It being understood that I disclaim the mere substitution of rockers for feet in any form of bed or cradle, that being a common practice, but claim the feet or rockers, F F, reversible, in the manner and for the purpose substantially as set forth.

SASH HOLDER—Stephen R. Brown, of East, Kingston, N. H. : I do not claim a lever bearer and a spring for holding a sash in its frame, or to operate as a sash holder.

But I claim applying the spring so as to be capable of being slid or adjusted lengthwise on its abutment, and so as to bear against the lever bearer in whatever position the spring may be set, the same being for the object or purposes as specified.

OPERATING CHURNS—Addison G. Brush, of Great Bend, Pa. : I claim the arrangement of the revolving platform, D, having short arms or tappets, c c c, attached and operating the churn dasher, in connection with arms, A A and F, and shaft, B, the whole constructed as specified.

MODE OF HEATING ROTARY BOILERS—C. S. Buchanan, of Ballston, N. Y. : I claim combining and surrounding a cylindrical boiler made to revolve upon its axis, with one or more stationary envelopes, made of fire brick, or any other equivalent material, arranged at such distance from said boiler, as to allow the fire and other products of combustion to pass around the boiler, in the manner and for the purposes specified.

I also claim arranging the stationary envelopes around a rotary boiler, in such a manner as to leave both the ends and the middle of the said boiler uncovered, for the respective purposes of protecting the journals at the ends of the boiler from heating, and of allowing access to the man-hole, as specified.

Also in combination with a boiler constructed and operating in the manner described, I claim two furnaces arranged as described symmetrically in relation to the boiler, whereby the heating of said boiler can be effected in a more economical and uniform manner.

SEEDING MACHINES—Samuel Burnside, of Reading, Ohio : I do not claim separately the reciprocating seed slides, D, for they are in common use.

Nor do I claim the hoes, J, separately.

But I claim the movable conveying tubes, K, with hoes, J, attached, in combination with the seed slides, D, the above parts being operated as and for the purpose set forth.

[In this machine the seed slide, conveying tube, and hoe, are so arranged that the seed is deposited in hills, covered, and the hills marked, the several parts acting automatically as the machine is drawn along. The machine is designed for planting seed in check rows, and to facilitate sowing in this way.]

POCKET SUPPORTER FOR BILLIARD TABLES—John E. Came and Simeon Havens, of Boston, Mass. : We are aware that it is not new to apply a cushion to a surface, to protect such from injury ; therefore we do not claim such.

Nor do we claim the application of elastic cushions to the guards of a billiard table.

But we claim the arrangement of a strip of vulcanized rubber, or its equivalent, along the inner edge of the pocket supporter, and between the same and its leather covering, the same being for the object and purposes as set forth.

LIME KILNS—George W. Calkins and Henry White, of Cleveland, Ohio : We do not claim any of the parts separately.

But we claim the arrangement of a lime kiln, or parts of a lime kiln, as described, that is to say, the arrangement of the furnaces, F' and F, provided with the diagonal mouths, G G' G2, in combination with the dampers, H H' and K, the ash pits, O, the cold blast aperture, P, the flue, J, and a hinge chute draw, D, when the several parts are constructed and arranged with relation to each other, as described, and operating in the manner and for the purpose set forth.

HAY AND COTTON PRESSES, &c.—Lincoln L. Cummings, of Munnsville, N. Y.: I do not claim the screws, l, and nuts, J, for the purpose of operating the follower, B, for they have been previously used.

But I claim the caps, D, sliding plates, E E, and the bar, C, in combination with the screws, I I, and nuts, J, the whole being arranged to operate as and for the purpose set forth.

[The object of this invention is to overcome the difficulty attending the free or perfect operation of the press, in case the follower in its descent assumes an inclined position. This object is attained by having the screws, which, in connection with rotating nuts, form the device by which the follower is operated, fitted in movable plates, so that the screws and nuts may, when necessary, be shifted or adjusted, for the purpose of regulating, during the operation of pressing, the position of the follower.]

MACHINES FOR HULLING RICE—Philip Dickenhof, of Philadelphia, Pa. : I claim the combination with the compensating delivery spout, b, of a revolving clearer, C, interposed between the said spout and the hulling mechanism or surfaces, essentially as set forth.

I likewise claim the revolving clearer, C, constructed as described, with its opposite acting sides or edges shaped to produce similar action in opposite directions of travel, and the outer ends of said edges formed to counteract the centrifugal throw of the clearer, as specified.

DEVICE IN FEED MOTION OF SHINGLE MACHINES—Elbridge Drake, of Gardiner, Me. : I claim the application to shingle machines of the knee, G, combined with the slide, C, in such manner as will produce the desired effect, as described.

WATCH CASES—James M. Durand, of Newark, N. J.: I claim connecting the inner case of a watch to the outer one by a hinge and pivot, so that said inner case may be raised up and turned over, to make a hunting or open-faced watch without opening but one of the bizzles, as set forth.

WINDLASSES—John Harvery, of Carmel, Me.: I claim my mode of obtaining power by a windlass and ropes, constructed and arranged substantially as specified ; and I particularly claim making the windlass with the conical or tapering parts, I, in conjunction with the cylindrical parts, D E, or either, as described.

HAND PRINTING PRESSES—Charles A. Haskins, of New York City : I claim the application of the ink reservoir with the plunger or gate of gutta percha, or its equivalent, for letting down the ink, in combination with the spring bed plate and the inking roller, which is accommodated to the face of the type in the process of inking, by means of slots in the arm and spiral springs attached to the same, substantially as described.

SEWING MACHINES—Abial C. Herron, of Remson, N. Y. : I claim the arrangement of the mechanism by which the feeding surfaces upon both sides of the cloth are moved as stated, and by which the motions produced are combined and applied at the same time to the feeding surfaces upon both sides of the cloth, viz., the arrangement of the rocker shafts above and below the table, with the connecting and intermittent pressure mechanism, or its equivalent, whereby I am enabled to feed the article to be sewed between two smooth surfaces, both having a positive, uniform, independent and intermitting motion, substantially as above described.

I also claim the arrangement of the mechanism, or its equivalent, for interweaving two threads upon the upper surface of the cloth, substantially as described.

MANUFACTURE OF BURNING FLUIDS—Levi L. Hill, of Greenport, N. Y. : I do not claim the mere mixture of tar and crude turpentine, nor the above method of making caoutchousine, nor any peculiarity in the form of my apparatus.

Neither do I claim the use of benzole or naphtha for carbonizing air or gas, for benzole alone, and benzole mixed with alcohol, has been used for air, and naphtha for gas.

But I claim, first, the use of caoutchousine for imparting greater volatility, as well as greater stability, to my compounds.

I wish to be distinctly understood as claiming the use of caoutchousine only in combination with the liquids described.

Second, I claim the liquids described as newbian oils, A B C D, having the composition and properties set forth, to be used singly or in such relative proportions and admixtures as may appear necessary to accomplish the purposes set forth.

REDUCING WHEEL TIRES—Iris Hobson, of Stout's Grove, Ill. : I claim the sliding curved anvil formed of one straight and two semi-elliptic spring bars, K L M, and furnished with two holding jaws, O O, in combination with two toothed stationary jaws, o' o', and a vise screw, I, substantially as and for the purposes set forth.

FIELD FENCE—Thomas Hoge, of Waynesburgh, Pa. : I do not claim forming a hinge joint as being new, as that has been done before, though different from mine.

Neither do I claim the use of the brace, or any other part, in any form in which it has been known or used.

But I claim the round hole or mortise through the sill or chair, f, with the projecting ends of the boards, b' b', passing through said hole or mortise, and the adjustable brace, d, with a hole or series of holes in its upper end, and the battens, c', arranged as described, for the purposes set forth.

SKIRT HOOPS—David Holmes, of Westfield, Mass.: I claim, first, The connection of the hoops, by interlacing hoops in the manner substantially as described.

Second, The attachment of the loops to the hoops by two lipped clasps, E E, applied in the manner substantially as described.

Third, The formation of eyes, e e, in the braiding at the extremeties of the hoops, to serve as slides, substantially as specified.

[The hoops in this skirt are connected together by a series of interlacing loops. A peculiar kind of clasp is employed for connecting the loops to the hoops, and eyes are formed at the extremity of the hoops, which act as slides.]

APPARATUS FOR DISTILLING OILS—John Howarth, of Salem, Mass. : I claim, first, In combination with the still, the reservoir placed above the level at which the oil is to be kept in the still, and the worm heated as described, or in any other manner whereby heated oil under pressure is fed into the still in such a manner as to keep the oil therein always at one and the same level, as set forth.

Second, The use of a pipe communicating with the several vapor spaces within the still, as described, whereby the condenser is relieved from the incondensable gases that are generated in the still, and which prevent the effective condensation of the vapor.

Third, A cutter formed in the neck of the still, for the purpose specified.

POST AND PILE DRIVER—Oliver Hyde, of Benicia, Cal. : I claim the suspending of the gin from the top by any of the mechanical appliances known to accomplish that end, thereby enabling a post-driving machine to accommodate itself to any unevenness of the ground over which it may be moving.

I also claim the sextant-formed frame to keep the gin in position.

MANUFACTURE OF ROUND BELTING—Marshall Jewell, of Hartford, Conn. : I claim a new manufacture of round leather belting, composed of two or more thicknesses, stitched and twisted as shown, in the manner and for the purpose set forth and described.

TANNING LEATHER—Horace G. Johnson, of Cleveland, Ohio : I claim the use of the Anthemis Cotula, or any other species of Maruta, either separately or mixed with Terra Japonica in any proportion, or combined with alum and common salt, or their chemical equivalents, in the manner and for the purpose set forth, not intending, however, to confine myself to the exact proportions named.

ADJUSTABLE HANGER FOR SHAFTING—Wm. Johnson, of Lambertville, N. J. : What I claim is not the employment of a box with trunnions or pivots solidly attached thereto, nor a box movable by means of a ball and socket, nor the adjusting of the box in position, either vertically or laterally, by means of screws, or screws and nuts, with or without a vertical stem, carrying the box with it, nor in a particular proportion, size or shape (except in the particulars mentioned of any of the parts). But it is the cylindrical instead of the globular form of the curved surfaces of the box, the axis of each cylinder (of which the opposite surfaces are parts) being at right angles to the other, and the axes of both being at right angles to the axis of the box or tube itself, so as to allow either pair of opposite plugs or blocks to serve as trunnions, or pivots, or centers, upon which the box or tube may turn or revolve longitudinally, and so that the action or pressure, or strain of, or upon, the box, in whatever direction or from whatsoever cause, shall always be perpendicular to the several surfaces of the box and of the plugs or blocks pressing against the same, and so that the plugs or blocks become so many perfect abutments, always acting perpendicularly and never obliquely against the point of resistance, thereby securing a greater degree of compactness, simplicity, and strength relatively to the weight of material and costs of construction, than by other methods.

What I claim is the two pairs of cylindrical surfaces at right angles to each other and to the axis of the box, in connection with the four plugs or blocks, each with a cylindrical curvature fitting to that of the box, and secured and adjusted by the four screws, the whole constructed and operating substantially as described and set forth.

RETORTS FOR GENERATING GAS—Wm. H. Lauback, of Philadelphia, Pa. : I claim, first, The construction of the retort with a convolute passage made in two parts, fitting together in the manner substantially as described, whereby a great amount of heating surface is obtained for the conversion of the vapor into permanent gas, and provision is made for cleaning out the passage.

Second, Combining the movable cover, G, with the valve, E, of the charged by means of a T-shaped head on the valve stem and pins, g g, inside the said cover, or their equivalent, to regulate the supply of fluid material to the retort while in operation by turning the said cover.

[A notice of this improvement will be found on another page.]

CORN HUSKERS—Lucius Leavenworth, of Trumansburgh, N. Y. : I claim attaching to the arm or other part of the chair, the two rollers, or their equivalents, in the relative position, and for the purpose described.

I also claim the combination of the hinged lever, d, curved chisel, g, and rollers, c c. with a seat or chair, in the manner and for the purpose described.

IVORY FRAME COMPOSITION—J. M. Legare', of Aiken, S. C. : I claim the employment of any saponified material, in combination with a neutral clay, as a basis of my composition, substantially as set forth in the specification.

SEEDING MACHINES—D. B. Neal, of Mount Gilead, Ohio : I claim the peculiar arrangement of the gage slide, e, the screen, d, and the pin. p, with the bottom, g, and seed slide, G, for the purpose of regulating the quantity of seed to be discharged, and at the same preventing straws or chaff from choking the slides as is fully set forth.

FASTENING FOR DOUBLE DOORS—George H. Lindner, of Hoboken, N. J. : I claim the catches, D D, having cams, b, attached to their inner ends and arranged with the slides, E, having springs, c, placed on them, in connection with the plate, f, and springs, e, the whole being applied to the door, B, so as to be used in connection with the fellow door, C, substantially as and for the purpose set forth.

[By this invention the hand bolts or fastenings which have hitherto been employed are dispensed with, and an automatic catch which will secure a folding door by merely closing it, is substituted the security or fastening being complete when the door to which the catch or lock is attached is closed, and secured to the other door.]

DOOR LOCKS—John R. Marston, of New York City : I do not claim separately any of the parts, as they are well-known.

I am aware of the patent of William Moore, September 14, 1852, and I therefore make no claim to any device patented to him.

But I claim the sliding key-hole cover, I, constructed and operating substantially as described, and acting in combination with the bolt, C, for the purpose of making a door-lock proof against any outside communication when locked from the inside without requiring any adjustment, substantially as set forth and specified.

COTTON SEED PLANTERS—Arnold McDonald, of Salem, Miss. : I claim the combination of shaft, T, its grooved seed distributing wheel, D, and sterrers, b b b b, with hopper. E, the whole being constructed. arranged and operating in the manner and for the purpose described.

LAMPS FOR LIGHTING GAS—Charles McIntosh, of Jersey City, N. J. : I am aware that openings have been formed in the lower portions of lamps for producing draft and supplying air to the flame, and therefore I lay no claim to this device.

What I claim is constructing the lamp with a vertical or nearly vertical passage, H, through it, when used in connection with a lantern. substantially as and for the purpose set forth.

[The nature of this invention and improvement consists in forming a flared opening in the base or reservoir of the lantern, in such a manner and in such relation to the flame as to enable the flame to draw a stream of gas from the burner, and ignite the same by simply passing the lantern over the burner.]

WASHING MACHINE—B. D. Morrell, of Windham, Me. : I do not claim holding the rubber down by a spring and adjusting collar, nor do I claim a socket arranged below the bottom of the tub.

But I claim the fitting and adjusting up and down of the rubber, D', over and within a hollow detachable metallic socket, C, projecting up from the bottom of the tub means of a central hole, b, a revolving spindle, D, and sliding collar, G H, arranged precisely as specified and shown.

[By this improvement in tub washing machines, the rubbing board can be adjusted or raised or lowered more or less, so as to suit the quantity and quality or texture of the clothes to be washed, and thus either a direct action of the rubber upon the clothes, or simply the motion given to the water by the circular vibration of said rubber, can be employed for removing the dirt from the clothes. The socket and all the attachments of the machine can also be removed from the tub, and the tub used as a common wash tub.]

METALLIC WINDOW BLINDS—Chas. Neer, of Troy, N. Y. : I claim, first, Connecting the slats of metallic blinds by means of staples inserted into a folded metallic strip, when bent up and secured, substantially as specified.

Second, I claim the circular spring tenon formed on the ends of sheet metal, blind slats, substantially in the manner specified to be inserted into the hole in the stiles, and cause the necessary friction, but prevent the tenon bending, as set forth.

Third, In combination with said sheet metal blind slats, I claim the metallic frames formed of the detachable rails and tapering stiles in the manner and for the purposes specified.

Fourth, I claim beveling the stiles each way from the line of holes receiving the ends of said metallic blind slats, for the purpose of giving freedom to the slats when opened, but forming a tight joint when closed, as set forth.

CRACKER MACHINE—Charles Neer, of Troy, N. Y. : I claim, first, The grating, i, perforated with conical holes, in combination with the dough box, h, and follower, k, substantially as and for the purposes specified.

Second, I claim the worker, r, having the eccentric motion specified, and provided with the cavities, 11, substantially as and for the purposes specified.

Third, I claim the plate, 7, formed with the convex parts. 15, substantially as and for the purposes set forth.

APPARATUS FOR RAISING SUNKEN VESSELS—Milo Osborn, of Osbornville, Ohio : I claim the sinker arranged with the rod, I, adjustable hooks, J and K, and bail, J', and in combination with the buoy, F and clasp, G, substantially as described, the same operating in connection with the cables, A and D, in the manner and for the purpose set forth.

CLOTHES' FRAME—Enos Page, of Streetsborough, O.: I am aware that folding clothes racks and frames have been known and used.

But I claim the combined sections, I J K, composed of the vertical jointed and folding standards, in combination with the adjustable crossbars, when arranged as set forth for the purpose described.

INVALID BEDSTEAD—Joseph Parker, of Liverpool, England. Patented in England Dec. 14, 1857 : I am aware that bedsteads have heretofore been made, in which parts of the frame have been made movable, so that the whole or part of the body of the patient or persons reclining thereon may be raised into various positions as may be required. I do not therefore mean or intend to claim the exclusive right to use or apply movable frames to bedsteads for such purposes except when such object is effected in the manner and by the means of the mechanical appliances and arrangements above described, or any analogous contrivances.

In conclusion, I claim, first, the mode shown and described of constructing and operating the movable parts of invalid bedsteads. I claim, particularly, the combination of the movable head-board, c, with the movable frame, i, and also the attachment of the bolster to the head so as to prevent it from slipping behind the patient.

Second, I claim the use and application for the purposes mentioned, or for analogous purposes of the movable foot board, and the mode of constructing and operating the same.

MACHINES FOR CLEANING GRAIN—Wm. Partridge and G. W. Shaw, of Ellicott's Mills, Md. : We claim the combination of the spike-studded beaters, G, upon drum, D, with the notched and grooved dress of the outer casing, constructed as described, the whole arranged and operating together substantially as and for the purposes set forth.

We also claim the combination of the pan, W, chamber, C, channels, I, and blast trunk, T, adjustable by means of the vertically moving spout, R, attached to sliding breast piece, f, arranged and operating substantially as set forth.

STRAW CUTTERS—C. P. Perry, of Norristown, Pa. : I do not claim the upward cut of the knives, neither do I claim, broadly, allowing the feed roller, d, to yield more or less from the roller, e, and at the same time to continue its rotary motion.

But I claim the shaft, E, with its pinions, J, the shaft Z, with its wheel, R, and the spindle, P, with its pinion

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K, when the said shafts are linked together, and the said wheels and pinions are arranged with respect to each other, substantially as and for the purpose set forth.

CAR WHEELS—John Pugh, of Franklin, Tenn. : I claim the employment of the hollow or tubular spoke, B, combined with the solid spoke, A, for the purpose of respectively receiving the strain arising from the unequal contraction in cooling of the different volumes of metal in the inner and outer sections, E D, or portions of the rim independent of each other, in the manner described.

[This inven ion consists in employing solid wrought iron spokes surrounded by and enclosed within hollow wrought iron spokes of a shorter length, in such a manner as to enable the outer segments or rim of the wheel, ar . the inner sections of the inner portion of the same, to be cast around the ends of said spokes and to shrink in cooling independent of each other, and the hub to be subsequently cast within and around the inner ends of the spokes after the rim has been cast.]

GAS BURNERS—A. H. Ray, of Boston, Mass. : I claim the described gas burner, consisting essentially of the the chamber, F, heating tube, G, and the cone, D, or its equivalent, operating in the manner substantially as set forth.

DEVICE FOR HOLDING SHEEP WHILE BEING SHEARED—D. R. Beed and J. E. Chapman, of Castile, N. Y. : We claim the adjusting wheels, E E, and bed, G, fitted to a suitable base, A, and arranged substantially as and for the purpose set forth.

[A full description of this invention is given in another column.]

METALLIC HUBS FOR CARRIAGE WHEELS—S. J. Russell, of Chicago, Ill. : I claim the wedge-shaped projections, E and F, when employed in connection with the spaces, e e, and hooks, S S, for receiving the spokes, and locking the two parts of the hub firmly together, substantially as set forrth.

I also claim the use of india-rubber to protect the woody fiber of the spokes, as set forth.

RETORTS FOR DISTILLING OILS FROM COAL—T. D. Sargent, of Washington, D. C. : I claim the use of the cylinder retort made of clay, and so arranged as to revolve upon its axis, during the process of distillation, or in place of a whole revolution, making only three-fourths of a revolution and turning back again, thus producing an oscillating motion for a clay retort, in the manner and for the purposes set forth.

CONSTRUCTION OF HARNESS PADS—R. M. Selleck, of New York City : I claim, first, The cast-iron frame, having the depressions, E E, in combination with the recesses, O O. cast on each side, for the side straps, D, to fit in, substantially as and for the purposes described.

Second, The under plates or clamps to secure the pads, provided with hooks, F F, fitting into the depressions and recesses, S S. on the frame, the ends of the pad being secured by screws, substantially as and for the purposes set forth.

LIGHT REFLECTOR—Wm. F. Shaw, of Boston, Mass. : I claim a luminous reflector or lamp shade made of conducting or slowly conducting material. constructed substantially in manner and so as to operate as described, both as to the reflection of light and the dispersion of heat and light.

WEATHER STRIPS FOR DOORS—M. M. Shellaberger, of Joliet, Ill. : I do not claim, broadly, a hinged door, or weather strip, so arranged as to be actuated by the opening and closing of the door, for many sueh devices have been used.

But I claim the plate or strip, C, provided with end pieces, E F, pivoted to the casing, A, as shown, namely, by pivots or screws, b, passing through oblong slots, a, in the end pieces, and having one of the plates connected to a slide, G, as shown, and provided with a catch, f, which, when the door is closed, passes within a recess, H, in the door, and over a plate, I, the above parts being used in connection with the plate, J, or its equivalent, and the whole being arranged to operate as and for the purpose set forth.

[A metal plate bent upwards at its ends, and pivoted to the casing or frame of the door, forms the weather strip; the horizontal portion of the plate extends the whole length of the door sill, and a slide is connected with one of the end pieces of the strip, and so arranged that as the door is closed, the plate will be inclined or tilted, so that its upper edge will pass underneath a plate attached permanently to the door, the whole heing arranged so as to obtain a perfect weather proofstrip.]

FURNACES FOR BURNING BAGASSE, &c.—EvanSkelly. of Plaquemine, La. : I claim the angular internal projections, a a, central cone, b, and air passages. c d d' e f g, combined and arranged substantially as described to operate as set forth.

[An engraving and description of this furnace appeared on page 308 of the present volume of the SCIENTIFIC AMERICAN.]

ICE PITCHER—Geo. W. Smith, of Hartford, Conn. : I am aware that vessels have been constructed with a double wall, for the purpose of preserving their contents from the exterior heat, and I therefore do not claim this device.

But I claim surrounding double wall pitchers with an additional concentric shell, E, and their double bottoms and covers with corresponding additional disks, G G', for the purpose of protecting the same from being battered through carelessness in handling and other cause, and preserving them from the direct contact of external heat, and thus keeping a colder body of air in contact with them, of such temperature as shall not only more thoroughly preserve the cold temperature of the ice and water contained in the said pitchers, but also prevent the condensation of air on the exterior surfaces of the same, and the consequent dripping of the water thus accumulated therefrom, substantially in the manner set forth.

[See description of this invention on another page.]

HARVESTERS—S. F. Smith. of Magnolia, Ill. : I do not claim any of the parts separately.

But I claim the application of the rake to the reel of a reaping machine by means of the slides, C, guides, c, rollers, d, longitudinal planes, i, and rod spiral spring, k, when these several parts are constructed and arranged as set forth for the puoposes specified.

BRICK KILNS—G. L. Smull, of Meadville, Pa. : I claim, first, The molding wheel, C, in combination with the press, V, toggle joint, P, and the incline plane, O, for operating the followers, U U, when these several are constructed, arranged and operated as described and for the purposes set forth.

Second, I claim the hooks, S, constructed as described, and operated by the crank, J, for operating through the rod, R, the toggle-joint, F, in the manner and for the purpose set forth.

Third, I claim the half wheel, I, in combination with the pinions, H and G, cranks n and m, and connecting rod, 11, for giving intermittent motion to the molding wheel, C, when the several parts are constructed, arranged and operated as and for the purposes described.

CLASP FOR SKIRT HOOPS—Thomas Wallace, Jr., of Ansonia, Conn. : I claim the clasp formed with lips, b b, at each side of each end, and with teeth, c c, at its edges, to operate in the manner set forth.

[This is a convenient and simple clasp for attaching the tapes to the hoops of ladies' skeleton skirts, and from its very simplicity will, we have no doubt, recommend itself to all who manufacture these articles.]

PIANOFORTE ACTIONS—Henry Steinway, of New York City : I claim the spring, e, attached to an arm. j, at the back of the jack, and arranged relatively to the hammer substantially as described for the purpose set forth, and in combination with the spring thus arranged and applied, I claim the hooked screw, k, applied to the arm, j, as described, to adjust the spring relatively to the hammer, and confine it laterally in a proper position.

[The object of this invention is to provide for the instantaneous return of the jack to its notch in the hammer butt after the hammer has struck the string, for the purpose of enabling a quick repetition of the blow to be given by a more simple contrivance than that for which a patent was granted to this inventor, May 5, 1857. The invention is chiefly in the application of a spring to the jack in a peculiar way.]

LOCOMOTIVE SIGNALS—A. E. Turnbull, of Springfield, Ohio : I am aware that a combination of levers, or other devices, have been arranged on locomotives in such a manner as to cause obstructions or cams on the track to operate upon them as the locomotive passes the same and ring a bell, and thus give a signal. I do not therefore lay claim to the parts for accomplishing this object.

But I claim the combination of the additional lever, F, upon which the second stake or obstruction, H', operates, with the lever, E, for sounding the whistle, whereby the duration of the blowing of the whistle can be continued to any required extent, and stopped substantially in the manner set forth.

[See a description in another portion of this paper.]

GUN CARRIAGE—G. J. Van Brunt, of Dedham, Mass.: I do no not claim a friction apparatus and a tapering bed or tongue applied to a gun carriage, so as to arrest the rearward motion of the gun and carriage after a discharge of the piece, although I believe myself to have been the original and first inventor of the same.

But I claim the application of friction apparatus, substantially as described, to the gun carriage and tongue in such manner that when the carriage is being retracted or under recoil, it shall be elevated in a manner to raise its wheels off the deck or floor under it, and cause the whole weight of the gun and carriage, or that of the latter to be borne by the tongue or friction apparatus, and in a manner to increase the friction and pressure of the friction bearers or the tongue on their supporting surface, substantially as described.

I also claim the arrangement of the shaft, E, the friction bearers, c c, and their eccentrics, D D, and straps, E' E', or equivalents, with reference to the gun carriage, A, and the tongue, B, thereof.

I also claim the combination of the tripper, H, with the tongue and friction apparatus, the same being for the purpose and to operate as specified.

I also claim the combination of the adjustable spring stop, K, with the gas carriage, A, and the lever, F, of the friction apparatus.

FIELD FENCE—H. S. Wentwor h, of Norvell, Mich. : I am aware that the tapered or pyramidal posts are not new. I am also aware that the panels have been secured to these posts by various devices, among which notches in crossbars are included. I claim none of these de vices.

The particular improvement which constitutes my said invention, and which I claim as having been originally and first invented by me is, the combination with tapered movable posts of movable panels attached alternately upon opposite sides as shown and described.

HARVESTERS—S. Williams. of Stockton, Cal. : I claim first, The combination of the draught piece, D, side piece, f' of frame standard, E, lever, L, and rod connecting the same with the frame arranged for joint operation, substantially as described.

Second, The short axles, A A', depending arms thereof, suspension pieces, P, finger bar, B, and wheels, W W', connected together, substantially as described, in combination with the aforesaid arrangement for elevating the finger bar, the whole being constructed and arranged and operating substantially as and for the purposes set forth.

HULLING STONE DRESS—John A. Wilson, of Dover, N. J. : I claim the manner of generating and constructing furrows in hulling stones for the purpose of equalizing the distribution of the grain over the surface of the stones, so as to prevent clogging at the eye, and retaining the grain on the periphery of the stone until perfectly hulled, as is substantially set forth and described.

MACHINES FOR SIZING HAT BODIES—S. W. Wood, of Washington, D. C. : I claim sizing or planking hat bodies by rolling the bat continuously forward, that is to say, in one direction between endless belts running in opposite directions, and at different or variable velocities, as specified.

SEED DRILLS—M. C. Younglove, of Cleveland, Ohio : I claim the connected series of compound pocketed seed cylinders, I, in combination with the sliding sleeve journal, a, and the adjusting screw, c. the whole being arranged and operated substantially as set forth,

ARGUAND GAS BURNERS—Wm. W. Batchelder (assignor to Wm. I. Townsend), of New York City : I claim surrounding the cylindrical flame of an argand burner with supplemental jets, placed at such distances from each other, and from the central flame that they shall neither intermingle with each other, nor with said flame, and of such number as will produce the effects described.

ROTARY CULTIVATORS—E. T. Bussell, of Shelbyville, Ind., assignor to Wombaugh, Bros., of Cincinnati, O : In making these plows for the various purposes for which they will be used, as well as their adaptation to the varied soils in the country, many modifications will be necessary. It will be distinctly understood, therefore, that I do not confine myself to any particular style, so long as I maintain substantially the features set forth.

What I claim is the arrangement of machinery substantially as set forth for breaking up and disintegrating the earth for purposes of agriculture.

PROPELLER—C. F. Gardiner (assignor to himself and H. D. Gardiner), of East Boston, Mass. : I claim the arrangement of the wheels, w w, on the heads of the shafts, S, with the rack, r, and wheel, W, geared therewith, operatiug to reverse the paddles substantially as described, in combination with the wings, a a, and tongues, b, of the shafts, S, at and for the purpose set forth.

REVOLVING FIREARM—F. H. Harrington, of Springfield, Mass., assignor to Horace Smith, and D. B. Wesson : I claim the combination of the stop bolt, D, the jointed thumb piece, C, of the hammer, with the revolving cylinder, substantially in the manner and for the purpose specified.

BREECH LOADING CANNON—J. H. Murrill (assignor to himself, James Flynn and Peter Emrich) of Baltimore, Md. : I claim the employment of the slot, G, serving as a pocket for the reception of the charge in a proper position for entering the bore, J. when arranged in combination with a packing a, operated in the manner and for the purposes as set forth.

I claim the employment of the screw, B, in combination with the packing, a, operating in the manner as described for the purpose of closing the chamber and ramming the charge at the same operation, substantially as set forth.

SPRING BED BOTTOM—Geo. E. Safford, of New York City, assignor to himself, F. G. Ward, and F. T. Ward, of Buffalo, N. Y. : I do not claim the elliptic springs, thumbscrews, or frame, E, separately considered, as my invention, neither do I claim hinges or a hinged frame, as such.

What I claim is the jointed frame, hinged beneath and supported above, in combination with the springs, substantially as and for the purpose described.

CAR WHEELS, &c.—Webster Willoughby (assignor to W. H. Wizeman), of Markwell, Miss. : I claim the combination of the slotted bars or spokes, A, and oscillating hub, E, and disk, B, for suspending the axle of the wheel in advance of the center of the tread portion of the wheel, with the additional disk or wheel, H, for keeping the tread portion of the wheel and disk, B, in a vertical position during its revolution, as described.

[This invention consists in suspending and supporting the axles on which the weight of railroad cars and other vehicles rest, by means of slotted bars attached to the main body or tread por ion of the wheels, and securing an additional wheel to the axle for steadying the same laterally, in such a manner as to enable the axles to oscillate to either of the centers of said tread portions and to be slightly in advance of and eccentric with the same during the forward progress of the car or other vehicle supported by the same.]

RE-ISSUES.

SEWING MACHINES—Charles. A. Durgan, of New York City. Patented May 22, 1855 : I claim, first, The vibrating hook or its mechanical equivalent for holding down the thread during the partial passage of the shuttle through the loop when arranged and operating substantially as set forth.

Second, I also claim, in combination with the vibrating hook, or its equivalent, the employment of two continuous rotary motions, one working the needle, the other the shuttle, and this for the purpose of producing sewing without any rest on either the shuttle or needle in their movements, there by rendering a sewing machine capable of rapid action, simple in construction, and noiseless in its operation, substantially as set forth.

SEWING MACHINES—Wm. O. Grover and Wm. E. Baker (assignor to the Grover and Baker Sewing Machine Company), of Boston, Mass. Patented Feb. 11, 1851 : We claim as our invention only the combination of these three elements, namely :—First, a mechanism for making a stitch substantially such as is described, and consisting of an eye-pointed perforating instrument and a non-perforating eye-pointed instrument, substantially as specified.

Second, A stationary table or support for the material to be sewed, substantially such as specified, and performing the duties substantially as set forth.

Third, A feed in which the cloth is grasped between two surfaces without being attached to either of them, substantially in the manner and for the purpose set forth, meaning to claim as of our invention none of ihese elements severally or apart from the others, but only the three in combination.

ADDITIONAL IMPROVEMENT.

SHINGLE MACHINE—Elbridge Webber, of Gardiner, Me. Patent dated July 28, 1857—Improvement dated June 15, 1858: I claim the levers, L and L', as described, and the detents, D and E, in combination with notched piece, O, trip, R, and laterally adjustable trip piece, H, arranged and operating substantially as and for the purposes set forth.

DESIGNS.

PRINTERS' TYPES—George Bruce, of New York City.

Can an Employer claim an Invention made by his Workmen?

MESSRS. EDITORS.—Will you be so kind as to inform an unfortunate inventor if there is any redress for him when another party has sworn to his invention, and secured Letters Patent for it? My case is this: I am employed in a manufacturing concern, and have made several improvements in my own time, which the company claim as their own, simply because I am in their employ. Is this right? Yours truly,

H. H. C.

Albany, N. Y., June, 1858.

[Our correspondent asks two questions, and we have given them publicity because there are, no doubt, others interested in this subject.

He inquires if there is any method whereby he can obtain redress from a party who has appropriated his invention, made oath to it, and secured a patent, which he asserts has been done in his case. His charge is a serious one, but there is a method of obtaining redress, and he can, without much expense, avail himself of its requirements. He must apply for a patent for his invention in the mode prescribed for this purpose, and of course it will be rejected on account of the prior patent of the other party. He must then request the Commissioner of Patents to declare "an interference," which act will lead to the taking of testimony, and if he proves himself to be the original inventor, a patent will be issued to him. If the opposing party still refuses to yield, the United States Circuit Court will, upon a proper hearing, grant an injunction against the infringing party. Should this question be tested by a trial at law, if he establishes his claim as the original inventor, the court can then declare the patent issued to be null and void. If our correspondent cannot prove that he is the original inventor of the improvement, he has no redress; he must bear his lot, and consider himself to blame for his ignorance of the patent law, or of neglect for not availing himself, in due season, of its benefits.

In the course of our experience the question is often asked, "can an employer claim the inventions of a workman in his service?" We answer emphatically NO, unless there is a specific understanding between them that the invention is "got up" for the exclusive benefit of the former. We are fully sensible that there are some employers who regard their claims as complete to any improvement, valuable or otherwise, when made by a workman in their employ. Such an assumption, in the absence of any agreement, has neither the support of law nor equity. This principle does not apply to a machine made for the employer upon any improved plan. The employer can use the specific machine, but if the patent is issued he cannot sell to others the same right.—EDS.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims :—

MACHINE FOR CUTTING GLAZIER'S POINTS.—This machine (the invention of J. G. Baker, of New Brunswick, N. J.) is intended to cut the triangular pieces of sheet metal used by glaziers to hold the panes of glass in their place while the putty is hardening, and called "tins" or "points." The invention consists in the employment of a rotating drum with cutters attached, a stationary die or bolster, and feed rollers, so arranged that the tins or points may be cut from the sheet metal with great rapidity, and with but a small expenditure of power; and also for cutting shoe nails and other articles of triangular form.

MECHANICAL TOLLER.—J. Bartholomew, of Dundee, N. Y., has invented a novel device for gathering toll from grists. The invention consists in having a series of chambers formed in a rotating cylinder, and provided with valves, the chambers, as the cylinder rotates, passing under a spout, and receiving the grain, and the valve being so operated that the necessary toll will be discharged from one or more chambers into a separate receptacle, while the grist will be discharged from the other chambers either directly into a hopper or into any other proper receptacle.

GAS RETORT.—This invention consists in a certain construction of a retort, by which a very large heating surface is obtained, for the generation of gas, and convenience is afforded for cleaning out as often as necessary. There is also a contrivance attached for regulating the supply of material to the retort. W. H. Laubach, of Philadelphia, Pa., is the inventor.

DEVICE FOR HOLDING SHEEP. — When sheep are being sheared they get nervous and move about very much, thus hindering the operation, and endangering themselves, by causing the shears to run into their bodies. To prevent this, J. E. Chapman, of Castile, N. Y., has contrived a concave bed combined with rotating adjusting wheels, so arranged that they hold the sheep perfectly secure while being sheared, without hurting it.

ICE PITCHER.—The ice pitchers now commonly used are double-walled; this invention consists in surrounding an ordinary double-walled pitcher, or other vessel for holding liquids, with an additional shell, arranged concentrically with it, and arranging above the double top and bottom of the common pitcher corresponding additional disks, in such a manner as to interpose an additional air space to the entrance of the external heat, and thus more thoroughly preserve the temperature of the contents of the pitcher, and at the same time keep the exterior shell or wall at such a relative degree of temperature with the exterior atmosphere as shall prevent the condensation of the moisture on the outer surface, and the consequent unpleasant dripping of water. G. W. Smith, of Hartford, Conn., is the inventor of this excellent construction of pitchers, and they are manufactured in every variety of design by Rogers, Smith & Co., at Hartford, Conn., who also have an office at No. 170 Broadway, New York.

WHISTLE SIGNAL ALARM.—A. E. Turnbull, of Springfield, Ohio. This invention is intended to announce the arrival of a train near a station or other place, in order that the officials may be on the alert. It consists in arranging and combining two levers in front of the locomotive, and connecting them together, and terminating their lower ends in such relation to uprights fixed between the rails, where it is designed to blow the alarm whistle, as to cause one lever to open the orifice from the boiler to the whistle, and the other to close the same orifice, and thus close all communication between them.

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New Inventions.

Boyce's Method of Attaching Shafts to Vehicles.

It is a very common complaint made by those who are in the habit of driving light wagons that the shafts rattle, and cause a most unpleasant noise, when the wagon passes over a paved street or road. To correct this evil, and at the same time to secure a better attachment of the shaft to the vehicle, John A. Boyce, of Monroe, N. Y., has invented the attachment which we now illustrate.

Fig. 1

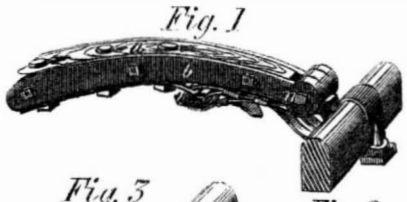


Fig. 3

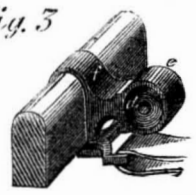


Fig. 2

Fig. 1 is a view of the end of a shaft attached to the axle shaft; Fig. 2 is a view of the end of the shaft, and Fig. 3 is a portion of the axle shaft. To each side of the shaft, *a*, is secured by screws and nuts, a piece of iron, *b*, on the ends of which, where they project beyond the shaft, is a hemispherical piece, *c*. To the axle shaft is secured by an iron band, *f*, which has a screw worked on its ends, and thus can be tightened on the axle shaft by a nut, a piece. *e*, and this has hemispherical depressions, *d*, one on each side corresponding with the projections, *c*.

The method in which they are attached is as follows:—The nuts of two of the screws that hold *b* on the shaft being loosened, the ends, *c*, can be separated enough to allow them to be passed into the depressions, *d*, each having first of all been covered with a piece of leather soaked in oil, to act as a washer. The screw, *n*, is then passed through one piece, *c*, and through *e*, and then is screwed into the other piece, *c*, the nuts are again tightened upon *b*, and the whole is secure as seen in Fig. 1.

There is no rattle, and no strain is exerted upon the pin or screw, *n*, all the pull coming upon *c* and *d*, which being separated by a washer do not wear or rattle, and as *n* only serves to keep the hemispheres, *c*, in close contact with *d*, should it by any accident become broken, the shafts will not be disconnected, but will be held in contact by the nuts on *b*.

This simple and valuable contrivance was patented April 27, 1858, and any further information can be had by addressing the inventor and patentee, as above.

New Buggy.

The inconvenience which often results from possessing only a one-seated buggy, or one that will only accommodate two persons, is, by the simple contrivance of this inventor—G. J. Lucas, of Poughkeepsie, N. Y.—entirely obviated, without adding many pounds to the weight of the vehicle. He provides on the one set of wheels a single or double-seated buggy, one that will seat two or four persons, as occasion may demand.

Our engravings represent a perspective view (Fig. 1), of the invention, and an outline section showing the change in position of the seats (Fig. 2).

The frame or body of the vehicle, A, is constructed as usual, and mounted on wheels, B. There are two seats, C and D, C being capable of sliding under D, and so forming a one-seated buggy. The seats can be fixed in either position by screws, so that they will not shake from their position. These seats are connected together by means of link-work, which we will now describe. In the body, A, is a groove, *e*, in which the pieces, G, move, and as they are securely attached to the seat, D, they serve as guides for it, and keep it on the ways, *b*, on which it moves by means of a groove in the sides, H. In H is secured a pin, *a*, that passes through a slot in the piece, E, which moves around an axle pin, *e*, attached to the body, A, and the other end of E is connected with a piece, F, by a pin, *c*, and this piece, F, is attached to the seat, C, which slides inside the body, A, by means of a pin, *d*. It will be seen from this connection of parts that as the seat, D, is moved forward towards the dash-board, the lever, E, will assume the position indicated by the dotted lines, and the seat, C, will be pulled backward underneath the seat, D, as is also indicated by dotted lines. so that by moving D forward when there are two seats, only one seat will be obtained, and when there is only one seat, moving D backward will bring out C, making two seats. The seat, C, may be made to form a box for containing any necessary accompaniments to a vehicle, and this method of constructing buggies does in no way interfere with the graceful appearance of the vehicle.

LUCAS' IMPROVED BUGGY.

Fig. 1

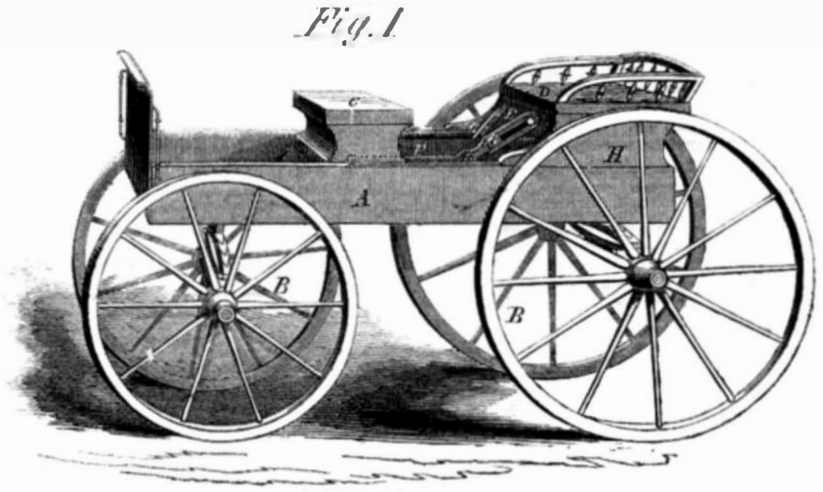
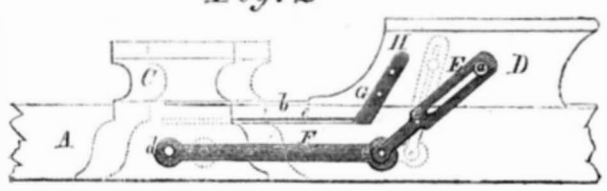


Fig. 2



This plan of constructing seats of buggies was patented April 27, 1858, by the inventor, and assigned to himself and J. G. Lucas, of Poughkeepsie, N. Y., who may be addressed for any further information. A short notice of this invention appeared on page 276 of the present volume Scientific American.

Ingersoll's Cotton Bale Band Fastener.

Cotton bales, when secured by metallic bands, are of course much more firm than when tied round by ropes, and not so liable to accidents by fire, but there is a difficulty usually in fastening these metallic bands to catch them at the proper tension and prevent them from slipping. The subject of our engravings is a clasp for this purpose, which we will now proceed to describe. Fig. 1 is a longitudinal

Fig. 1

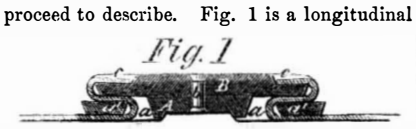


Fig 2

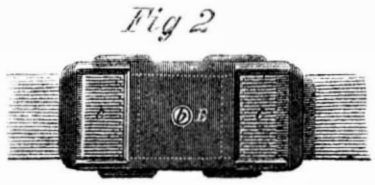
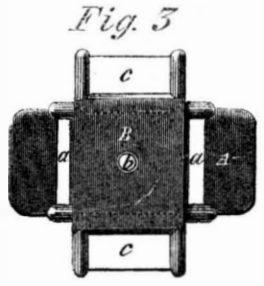


Fig. 3



section of the clasp in a closed or locked state securing the ends of a band; Fig. 2 is an outer view of do., in a locked state; Fig. 3 is a detached view of the clasp in an open or unlocked state. A represents a metallic plate having openings, *a*, made through it at equal distances from its center these openings being of rectangular form and extending nearly across the plate, the central portion of the plate being a trifle higher than the ends beyond the openings, *a*, as seen in Fig. 1. The plate A is of course wider than the band, because the band has to pass through the openings. B is a button of metal secured by a screw or rivet, *b*, to the plate A, so that it can turn freely upon the plate. It is equal in width to the plate, and a recess, *c*, is made in each end, sufficiently wide to receive the ends of the band. The device is used as follows: when the cotton or other article is fully compressed the ends of the hoop are drawn through the openings *a*, the device being in the position shown in Fig. 3, and the ends of the hoop are bent over the projection *a*, Fig. 1; the button is then turned to the position shown in Fig. 2, thus securing the hoop, and the ends are turned into the recesses *c*, of the button so that they may be protected from breaking off and thus spoiling the hold on the hoop. If the ends are too long to fit the recesses they can be cut to fit it. It will be seen from Fig. 1 that the angles of *a*, are obtuse so that the band will not be liable to be cut when the bale is relieved from pressure and the band subjected to the strain caused by the compressed article. Of course any number of hoops and locks may be used on a bale and the device may be cheaply made of cast metal.

It is the invention of P. C. Ingersoll, of Greenpoint, N. Y., who has assigned it to himself and H. F. Dougherty, of the same place, both of whom may be addressed for further information, or J. Beattie, Jr., Montgomery, Ala. A patent was obtained May 18, 1858.

Making Tough Steel.

A patent has been secured in England, by Mr. P. G. Gardner, of New York city, for manufacturing steel of a very soft and tough quality. Common cast steel is taken and melted in crucibles in the usual way; then poured into highly heated molds, to which the molten metal will not adhere, and kept at a high heat for six hours. After this, it is allowed to cool to a cherry red heat, when it is plunged into oil of 700° Fah., and kept at this temperature for seven hours. It is now cooled slowly, and found to be very soft and malleable.

Improved Self-adjusting Journal Box.

This is an improvement in the journal boxes of pitmen rods, connections, &c., which renders them self-adjusting. All boxes require to be well fitted to their respective journals, but a certain degree of tightness is necessary, to avoid, on the one hand, the heating of the journal or box, and to prevent, on the other, the jar or re-action of the connection or pitman rod on the wrist of the crank. Our engravings fully illustrate method adopted by this inventor to effect the above objects,

Fig. 1

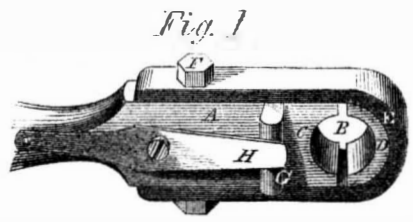
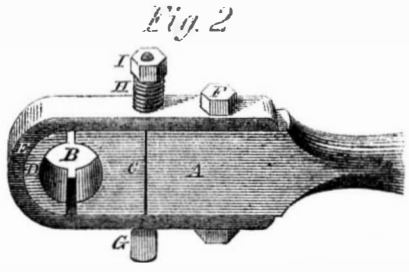


Fig. 2



and we will now proceed to describe them.

The connection, or pitman rod, is made in the usual manner, with strap, box in two parts, and a key or wedge to tighten the box. But instead of the key being made to be driven up by a hammer, when thought to be necessary, and then retained in its place by a set screw, a spring is applied in such a manner as to force in the key or wedge as fast as the box may wear, and thus keep the box tightened with a uniform pressure. Either a spiral or lateral spring can be used, as may be best adapted to the purpose for which the connection or pitman rod is designed. Fig. 1 represents the use of the lateral spring, and Fig. 2 the use of the spiral.

A is the pitman rod, B the journal, C and D are the boxes, and E is a strap held to the shaft or pitman by the screw bolt, F. In Fig. 1, a wedge, G, equal in width with the box, is passed through between the stub end of the connection or pitman rod and the box. On this wedge rests a lateral spring, H, secured to the connection, and regulated by a screw. The resistance through the medium of the box cannot drive back the key or wedge, for the resistance operates at right angles to the movement of the key and wedge. By practical experiment it has been found that it requires but little power on the part of the spring to force the key and wedge forward, and retain them, when the pressure of the spring is constant and uniform. At every revolution of the crank, the part of the box next to the key or wedge is relieved, and affords an opportunity for the spring to act and tighten it.

In Fig. 2, the wedge, G, passes vertically through a slot in the box, and in the pitman rod, and around its end is placed the spiral spring, H, against which is screwed the nut, I so that as the box wears, the half box, C, is brought closer up to the crank pin by the pressure of the spring pulling the wedge, G, in; by tightening or loosening the screw of the spring, Fig. 1, or I, (Fig. 2,) the power of the spring can be increased or diminished. The lateral spring is most applicable to saw-mills with wood pitmen rods; and both methods are found to be great savers of time, attention and friction, as well as promoting the uniform wearing of the shafts and boxes.

The inventor is L. Dederick, 218 Hamilton street, Albany, N. Y., from whom any further information can be obtained. A patent was granted March 9, 1858.

Burt's Montgolfiers.—These little paper balloons afford great amusement and are a pretty sight floating in the air, either by day or night, and they may be made the subject of an interesting scientific talk. They are sold by I. S. Clough, 231 Pearl st., New York.

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Scientific American.

NEW YORK, JUNE 26, 1858.

Coal in Canada.

When Sir Wm. Logan made his geological survey of Canada, by order of the British Government, he came to the conclusion, that from the deposits of that district, there could be no coal in the country. This statement was promulgated with all the weight that his name as an eminent geologist could give it, and consequently was unanimously received. During the last few weeks it has been reported that good coal *has* been discovered in Canada at a depth of 150 feet from the surface, and consequently many persons feel inclined to doubt the knowledge of the geologist, and seem to regard it as a detraction from his scientific character.

Coal is a stratified rock which is composed entirely of organic remains, and the plants which we find in it in the fossil state, and from which we deduce that it has been formed, are not water but land plants ; and although much coal has been the result of plants of marshy growth, and all the remains hitherto discovered in coal are such as would require the moist, carbonic acid atmosphere of the carboniferous period for their support, yet there is no reason why coal may not have been formed in other ways and at another geological epoch. All the beds of coal at present known have an underlaying seam or strata of clay or even sandstone, which has formed the soil on which the coal plants grew. Whether the one in Canada has or not we do not know, but we rather suspect it has not. What are the plants that compose the coal? Monstrous ferns, gigantic mosses, and magnificent pines have fallen on one another, in a lake of carbonic acid, some still standing erect, while the others lie prostrate around them, the rock which overlies the coal has been deposited on the top of them and they have been pressed into the solid, firm, and compact fuel we call coal.

Sir Wm. Logan, we suppose, judging from these well known facts, prophesied the absence of coal in Canada, and he was right, for it was beyond his province as an observer to speculate upon probabilities, but now the coal has been found, it does not show that the above eminent geologist was wrong, it is simply the opening up of a new field for geological research. We have noticed that coal is now supposed to exist near London, England, a place where no one ever dreamt of finding it, and from a similar accident, Canada may also enjoy the blessings of the possession of this valuable mineral, on which the wealth of a nation so much depends.

Let us for the moment imagine a scene, in the ages long since rolled away, which would form a seam of coal in any formation or at any epoch. The spring had been very wet, and the summer's heat had caused malaria and carbonic acid to accumulate in the hollows and valleys; the lovely autumn bringing on its "sere and yellow leaf" stripped the rich woods of their many-tinted leaves and the winds took them on their wings and spread them as a curtain over the land, local causes decayed the trees and the shrubs died away, the winter covered them with frost and snow, and the rains of spring spread them over soil and sand. Carry this process on and you may have a very respectable seam of coal, where, geologically speaking, no coal ought to be. Geology has to study the principles of nature, she has not yet had time to investigate the accidents, and by some such circumstances as those described, *i. e.*, local or accidental,' the Canada coal, if there be such a material, has been formed. In conclusion, every fact discovered should be turned to some practical use rather than used as a ground of complaint against men of science, as has been the tendency of the majority of articles on this subject which we have seen in our exchanges.

The Susquehanna—Official Stupidity.

This noble frigate has now been laying at anchor in the lower bay for about three months, entirely deserted and exposed to the action of the elements, by reason of a supposed prevalence of the dreaded yellow fever infection on board of her. The Navy Department having at length decided to relieve the vessel from her present position, the Board of Health have adopted the recommendation of Health Officer Thompson, which is, "that the stores and supplies of the frigate be discharged, and that she be disinfected," and in pursuance of the above plan, the Health Officer has issued his orders for the removal of the stores to the government warehouses, and has requested Commander Kearney to detach stevedores and lighters for this purpose. The subsequent disinfection he proposes to accomplish as follows:—"To sweep, scrape, scrub, fumigate, whitewash and ventilate in the ordinary manner; and then to place in contact with the walls and flooring of the vessel a mixture of pounded ice and salt, and to keep the same on board till a temperature far below the point of frost be secured in the hold of the frigate, and until the effect of the freezing mixture shall be decidedly manifest upon the internal woodwork of the vessel."

We are tempted to exclaim upon reading this sapient proposal, "Was there ever such official stupidity?" Having waited until the yellow fever season and the hot term are fairly upon us, aud having allowed the favorable spring months to pass by, the Health Officer now proposes to commence operations by exposing a number of laborers to the influence of the infection, and at the same time to disseminate the disease by distributing the supplies of this vessel throughout the public storehouses.

It certainly does not require any great amount of common sense to see that disinfection should at all events precede any attempt to discharge the contents of the vessel, and we hold that the Health Officer, by pursuing any other course, is liable to the individuals and the community whose safety he thus endangers. We should also like to know what expediency can demand the prosecution of this work at this season. The vessel has, as we understand, nothing on board but ordinary naval stores, and the value of these will not be essentially impaired by remaining in their present condition another three months, or until the arrival of autumnal frosts. Whatever is perishable on board the frigate has probably been already rendered entirely worthless. It were better, as far as dollars and cents are concerned, that the vessel itself should be set on fire or scuttled, rather than that the life of a single one of our citizens should be endangered. In the name of humanity, we protest against this movement.

A Railway Accident in England.

As a train was proceeding at express rate along the London and Northwestern Railway on the 10th of May last, the engine driver perceived a cow upon the road; he shut off steam, applied the brakes, but could not stop before the cow was entangled in the wheels of the engine, all the cars were thrown off the rails, and three passengers were killed. There was evidence to show that the persons in charge of the train had acted with wonderful presence of mind at the moment of the occurrence, and a gate-keeper was engaged trying to drive off the cow. Had the English locomotive been provided with an American cow-catcher this accident would not have occurred.

The Goodyear Extension Case.

Commissioner Holt, after a careful examination of the evidence and arguments, *pro* and *con*, brought to bear upon this important case, has decided to extend the patent issued to Charles Goodyear for vulcanized gum elastic on the 15th of June, 1844, for a period of seven years from the 15th of the present month, when his original patent would have expired.

Hussey's Cutting Apparatus for Reaping and Mowing Machines.

We present herewith an illustration of the cutting apparatus for harvesters patented by Obed Hussey, of Baltimore, Md., in 1847 The device covered by this patent has come into extensive use, and as it is now the subject of litigation, many of our readers will feel an interest in knowing just what Hussey has secured under patent. A suit involving the validity of the patent is now pending in the Circuit Court against McCormick. The invention is known as the *scolloped* cutter and *open slot* guard finger, Fig. 1 being a top view

Fig. 1

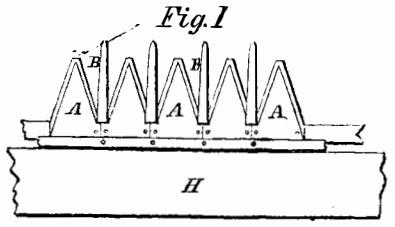
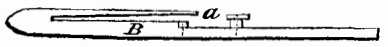


Fig. 2



of a portion of the finger beam, H, guard fingers, B, and cutter, A, and Fig. 2 is a side elevation of one of the guard fingers detached, showing the opening, *a*, through the rear part of one side of the slot, to permit grass and leaves that may be carried into the slot by the cutters to work out. The claim in the patent reads as follows:—

"I accordingly claim the opening above the blades at A, Fig. 3, and at D, Fig. 1, in combination with vibrating blades. I also claim the particular application of the flush edge at the forks of the blades for the purpose described. The end and design of the improvements above claimed is to prevent the blades choking."

A New Motive Power.

In the New York *Sun*, of the 19th inst., Dr. J. C. Fay, of Gravesend, L. I., states that a car has been propelled on the Long Island Railroad by a new motive power, which principally consists of springs wound up by a steam engine, and then they give out their power to move the car. He calls it a "perpetual motion" and asserts that more power is given out by the springs than is required to wind them up.

No person acquainted with mechanical philosophy can ever be gulled by such nonsense. No spring can give out quite so much power as that required to wind it up, because the loss by friction must be subtracted.

A boat was built about forty five years ago, in this city (New York) the paddle wheels of which were to be moved by springs, like the wheels of the railroad car referred to. It was to annihilate steamboats and establish a new era in navigation. When launched, the springs turned the wheels two or three times, then stood stock still, for ever. Such a distinguished fate is in store for the new spring power on the Long Island Railroad.

Mississippi Explosions.

One of the most terrible steamboat explosions which has taken place in a great number of years, occurred on the 13th inst., near Memphis, Tenn., on the steamboat *Pennsylvania*, while on her passage from New Orleans to St. Louis. There were 450 passengers on board, and no less than 250 are reported to have lost their lives. The boilers exploded with great violence, the boat then took fire, and burned to the water's edge. During the past three years very few explosions have taken place on the western rivers, and river traveling had become as safe as at the East. This was, no doubt, owing to the vigilance of the Steamboat Inspectors. This year the explosions have been frequent and disastrous, and the western steamboats are again fast earning their old character of "floating coffins." There must be something wrong in regard to the manner in which the provisions of the new steamboat law for the protection of life is carried out.

On the same day in which the above explosion took place, the steamer *Eclipse* exploded her heater when near Natchez, Miss., by which accident two persons were killed, and three dangerously wounded.

Beach's Improved Printing Press.

We witnessed a few days since the operation of the improved printing press for printing on both sides of a sheet of paper at once, patented by M. S. Beach, of the New York *Sun*, about a year since, and notwithstanding the imperfect and hurried manner in which the parts were put together for the trial, the impressions obtained were of such a perfect character as to warrant us in declaring the invention a complete success, and a valuable improvement on Hoe's "last fast." The improvements are simple, and easily understood. They consist in arranging on the type drum, where the balance weight ordinarily occurs, a second form, so that after the sheet is printed on one side, as heretofore, it can be brought back by an extremely ingenious contrivance, and printed on the other side from this second form, thus successively printing on both sides of the sheet without in any manner interfering with the usual motion of the press, and performing double the amount of work. In reality the adaptation of this improvement to the press enables an increased number of sheets to be printed beyond that produced by its double impression character. In other words, the same speed of type and cylinder surface which produces 20,000 impressions on Hoe's ten cylinder press, gives 44,000 impressions per hour on this one.

There is another improved feature in the printing "register" of this press of Mr. Beach's, which for simplicity, ingenuity, and effectiveness, recommends itself to all engaged in "the art preservative of all arts." We congratulate the ingenious inventor of this simple and thoroughly effective press on the accomplishment of an object upon which he has expended so much time, labor, skill, and expense, and pursued with such untiring energy for a series of years past.

The Ocean Telegraph Cable.

Several experiments have been made in the Bay of Biscay, in paying out the Atlantic telegraph cable. From the accounts published; these seem to have been unsatisfactory.—The cable parted several times; the machinery in the Agamemnon frigate got out of order, and floating buoys to relieve the cable of strain failed to operate. The tar coating of the cable accumulated on the sheaves of the paying-out machinery, and clogged its operations. This was talked of as a serious obstacle. Had there been a good practical chemist on board he could easily have prevented this. Considerable alteration must be made in the paying-out arrangements before the expedition starts on its grand and final effort.

The Atlantic Cable and Hughes' Telegraph.

The accounts which come to us from England are positively flaming with the wonderful achievements of quick telegraphing, by Hughes' instrument, through the Atlantic cable. It is reported to have sent twice the number of words in the same time than could be done by the best English telegraph, and they seem to consider it as surpassing every telegraph yet brought before the public. On this side of the Atlantic it is not held to be so simple or so rapid, we believe, as the Morse telegraph, nor can a message be sent by it a greater distance.

Horseshoeing.

Next week we shall present some very useful information upon this subject, by William Miles, of the Royal Agricultural Society of England. As there is evidently a lack of sound advice in this branch, the paper of Mr. Miles will, no doubt, afford interest to many of our readers.

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Steam Boilers and Furnaces.

ARTICLE 1.

We purpose to present a few brief articles on this interesting and very important subject. They will contain considerable information that is new, and much which, although old, is useful, and known to but a limited number. In Vol. VII., SCIENTIFIC AMERICAN, we published a series of articles illustrated with engravings of almost every kind of steam boiler and furnace. To go over the same ground again would be a work of supererogation. We intend principally to present information not hitherto given, especially some new views which seem to be gaining countenance among engineers in relation to effective heating surfaces and the draft of furnaces.

We will first give the substance of a very interesting paper which was recently read before the Manchester (Eng.) Philosophical Society, by Mr. J. Graham, on the subject of evaporation in boilers, in which the results of several experiments were described. He first made a set of experiments with small vessels of equal size, the fire being placed under the first, and the fire-bed passing under all the others, The evaporative power of the first vessel was equal to 100, the second to 27, the third to 13, and the fourth to 8, A second set of similar experiments were made with like results upon larger boilers. He also made quite a number of experiments on evaporation with large working boilers, and these were extended over a period of several years, observations on them being made daily, and recorded, with remarks deduced from the results obtained. The boilers were all set and put in the best possible condition for securing superior working advantages as regards the admission of air, the draft of the chimney, the size of the fire place, the distance of furnace bars from the boiler, the thickness of the furnace bars, the form of the flame bed, flues and fire bridges, and the thickness of fire under the boiler. Each experiment was of twelve hours duration, and from thirty to forty were made with each boiler, one of which was altered and set thirty times to vary the experiments. A perfect command was maintained over the draft of each, and the temperature at the bottom of the chimney was generally 612° Fah., sufficient to melt lead. First—A "butterfly boiler," 25 feet long and 7 feet in diameter, under ordinary circumstances, evaporated with one pound of coal 8.29 pounds of steam, with feed water at 60°; with warm water at 212°, it evaporated 9.69 pounds. Second—A James Watt "wagon-shaped boiler," 25½ feet long and 6½ feet in diameter, under similar circumstances, and with the same weight of coal, evaporated 8.08 pounds of steam, with cold feed water, and 10.26 pounds with hot water feed. Third—The plain cylindrical boiler, 42 feet long and 6 feet in diameter, with fire-place underneath, under the same conditions, evaporated 6.20 pounds, and 7.23 pounds of steam. Fourth—The cylindrical boiler, with two internal fire places, joined in one internal flue, and called "the breeches boiler," 23 feet long and 8 feet in diameter, evaporated under like conditions 5.90 and 6.88 pounds of steam—all to one pound of coal.

It was found that a supplementary boiler for heating the feed water, under favorable circumstances, effected a saving of 15 per cent in fuel. Flues round a boiler when cleaned out weekly, and the sides of the boiler scraped, effected a saving of 2 per cent. The difference between a good shaped boiler properly set, and a bad shaped boiler improperly set, but both kept clean, amounted to 42 per cent. The difference between good and careful fireing and bad fireing amounted to 13 per cent. Neither wet coal, nor coal out of the mine for three years, were found to produce any different results. Windy weather was generally favorable; a difference of atmospheric temperature from 40° to 70° did not produce different results. A comparatively thick hot fire, with a good draft, gave a much better result than a thin fire. Coals from the same mine were found to differ in evaporative quality to about 6 per per cent.

When the steam was employed for heating water in such vessels as soapmaker's and dyer's kettles, the higher the pressure of the steam, the greater was the effect. With the steam at a pressure of 2½ pounds, considering (according to Mr. Graham) the effect equal to 100; with a pressure of 7 pounds, its effect was equal to 120; and with a pressure of 10 pounds, the effect was 130, the same quantity of coal being consumed in each case.

This is a very surprising result, and if correct, it amounts to this:—When steam under pressure is employed, as it is very extensively in heating vessels, such as sugar pans, &c., the same weight of coal consumed in the same number of hours will heat under 2½ pounds pressure of steam, 10 vessels; at 7 pounds pressure, 12 vessels; at 10 pounds pressure, 13 vessels—all of equal size.

Little or no saving is effected by great length of flue, especially if it is coated with soot, and no advantage of any consequence is secured by very long boilers, one four times the length of the fire-box is more efficient than one longer. Considerable depends on the form of the boiler, and the genius of James Watt, even in his form of boiler, was shown—its evaporating power being superior to the others experimented with.

Canals versus Railroads.

MESSRS. EDITORS—The SCIENTIFIC AMERICAN stands deservedly high. I have every volume but the first, carefully bound, and for reference it is invaluable. I therefore feel a pride in having it put forth sound opinions and facts, that will bear reference hereafter. When I saw your article recommending in effect the abandonment of the Erie Canal, it astonished me—it "smelt of the shop." New York city owes its immense growth and wealth to the Erie Canal; yet the most active opposition to this grandest work of the present century has been, and yet continues, from that very city. Such glaring stupidity should not be supported by the SCIENTIFIC AMERICAN.

In your remarks on my article in No. 38, you change your position of abandonment of this canal, and say that the statements and conclusions of the friends of the canal are contradictory when they ask a tax on railroads for the benefit of this canal, and "their logic and sense of justice are very different from ours."

The friends of the canal never claimed that it would construct itself from its earnings before it was made. They do claim that it will refund every dollar of its cost within a short comparative period, and ever after save the people of this State from taxation for the support of government, and furnish beside a vast fund for benevolent purposes. For the purpose of raising funds to enlarge this canal, the State claimed the right to toll property passing from the West to tide-water; and when grants for railroads were given, it was stipulated that *they should not carry freight*, because it was foreseen that they might destroy this source of revenue while the canal, in its unfinished state, could not compete with them. Railroads were, however, subsequently allowed to carry freight, by paying the same tolls the boatmen navigating the canal paid. Not satisfied with this, the railroad made another attack on the poor boatmen and the canal revenues, and obtained a release from paying tolls at all. The boatmen were ruined under this one-sided competition, and the completion of the canal suspended for want of funds; and in this sad position the SCIENTIFIC AMERICAN and New York city propose to abandon the canal altogether. Better counsels prevailed, and the boot is being rapidly placed on the right foot. The people, not quite so stupid as the city, decided to complete the canal. The railroad influence, backed by Albany and New York city, prevented tolls being placed on railroads, but it was unable to prevent a partial completion and a reduction of tolls for the aid of the poor boatmen. The result begins to be manifest; the canal has now six feet of water, and boats carrying 160 tuns, or 1,600 barrels of flour, now pass from Buffalo to New York, and carry freight (paying tolls) at a rate that *railroads can't touch it without tolls*—and the poor boatmen are again doing a profitable business.

When the canal has seven feet of water, and boats propelled by steam carry 240 tuns, a further great reduction will then be made; and if railroads cannot *now* compete, what will be their position then? Would you ask the abandonment of the canal?

But for hostile influences this enlargement would have been completed in 1845, as was first proposed. How grand would our position now be, had evil counsels not prevailed! Thanks to the wisdom of the people, the glorious work will soon be accomplished, vindicating its friends, and covering with shame the stupid opposition of its enemies.

My object in making these remarks is to place on record in your valuable paper the facts. Let the intelligent reader judge.

X. Y. Z.

Lockport, N. Y., June, 1858.

[Our old and constant reader in his zeal for the interests of the Erie Canal, forgets our independent position—that we care not for the opinions of cities, cliques, or classes, in forming and expressing our own opinions. We view every question in the light of its own merits; and we could not produce stronger testimony in favor of the correctness and justice of the sentiments we have already expressed in reference to this question, than the foregoing letter of our correspondent. Our words will be few and final in reply.

The New York and Erie Canal—which is the property of the State—was completed and in successful operation long before the advent of railroads. When the first line of the latter was laid through the State it was treated as an interloper by the political monopoly of the canal, and was forbid to carry freight, because this would interfere with the canal revenue. By and bye, however, the wants of the community demanded the repeal of this unjust policy, and railroads were then allowed to carry freight, but only by paying toll for the privilege. Every person not personally interested in the Erie Canal saw and felt that this was rank injustice, and this feeling at last grew strong enough to get the act repealed; and so New York railroads have been free for a few years from this canal black-mail. But the spirit of aggression against our railroads is not dead yet. Last winter it was proposed to our Legislature to levy contributions on the railroads for enlarging the canal, upon assumptions like those set forth in the above letter. The attitude of the canal towards our railroads in this case, was like that of a sturdy beggar professing ability to do a better and more economical business, if the railroads were only compelled to furnish the means to enable him to go on and improve his condition; and those who oppose this injustice must be set down as enemies of the "poor boatmen."

We have not counseled the abandonment of the canal; but if it cannot be enlarged without imposing unjust taxes on railroads, it ought to be abandoned. From the step-dame disposition manifested towards railroads by the State, we think that had it owned the stage routes as it owned the Erie Canal, when railroads were first introduced, the latter (railroads) would have been taxed so much per head for each passenger, for the benefit of the "poor stage-drivers," upon the same feelings, principles, and sympathies exhibited for the "poor boatmen."—EDS.

Railroad Capital in England.

The London and Northwestern is the most powerful and wealthy railroad company in the world, having a capital stock of $164,825,580, and it also controls the Midland Railroad, with a capital of $105,588,065; the two having a length of double track of 1,204 miles. The Great Northern has only 283 miles of track, and a capital of $73,337,575. The Great Western Railroad Company has 465 miles of track, and a capital of $168,750,620.

The Telegraph in Australia.

This great island, or rather continent, is being fast interlaced with lines of telegraph. Electric communication has been opened between Adelaide, South Australia, and Melbourne, and rapid progress is now being made with several other lines. "*The South Australian*" says the whole of the instruments ordered for the South Australian Telegraph stations have now arrived from America, and workmen are busily engaged under Mr. Todd's superintendence, in preparing them for use. The instrument is Morse's, mounted on marble instead of wood, which is better suited to this climate. Chester's patent battery (an improvement upon Smee's) will be, in most cases, employed to generate the galvanic current.

Employers and Workmen.

A bill was recently introduced into the British Parliament, having for its object the settlement and prevention of disputes between employers and their workmen. When the second reading of it was called for by Mr. McKinnon, the Home Secretary—Mr. Walpole hoped it would not be pressed during the present session, as the bill was very defective, especially that part of it which related to the formation of a court of arbitration. Mr. A. Turner, a large employer, objected to the principles of the bill, and asserted it would do evil instead of good. He said that of late years, a growing feeling of amity had sprung up between employers and employed, and the bill would arrest this feeling. The people were becoming far too sensible to enter recklessly into strikes against their employers, and on the other hand employers were anxious to do all in their power to avoid disputes with their workmen. They had all united interests, and should have but one wish for the common good. The bill was then withdrawn. These sentiments, expressed in Parliament, exhibit cheerful signs of progress in Old England.

Scraps for the Scientific Museum.

FLIES.—A German naturalist has described six hundred species of flies, which he has collected within a district of ten miles. Thirty thousand different kinds of insects which prey upon wheat have been collected. This suggests the multitudinous infinitude of the total tribe.

EFFECTS OF LIGHT.—If the objects of the material world had been illuminated only with white light, all nature would have shone with a leaden hue; and all the features of the human countenance would have exhibited no other variety but that which they possess in a pencil or a China ink drawing. But He who has exhibited such matchless skill in the organization of material bodies, and such exquisite taste in forms upon which they are modeled, has superadded that ethereal beauty which enhances their more permanent qualities, and presents them to us in the ever-varying colors of the spectrum. The gay coloring with which the Maker has decked the pale marble of nature is not the result of any quality inherent in the colored body, or in the particles by which it may be tinged, but is merely a property of the light in which they happened to be placed.

PHYSIOLOGICAL FACTS.—The number of bones in the framework of a human body is 260, 108 of which are in the feet and hands, there being in each 27.

The quantity of blood in adults is, on an average about 30 lbs., which passes through the heart once in four minutes.

Only one-tenth of the human body is solid matter. A dead body weighing 120 lbs. was dried in the oven till all moisture was expelled, and its weight was reduced to 12 lbs. Egyptian mummies are bodies thoroughly dried; they usually weigh about 7 lbs.

The lungs of an adult ordinarily inhale 40 cubic inches of air at once, and if we breathe twenty times in a minute, the quantity of air consumed in that time will be 800 cubic inches, or 48,000 inches an hour, and 1,152,000 inches in a day, which is equal to 86 hogsheads.

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Correspondents

F. W. F., of C. W.—Wilson's process of "rendering" lard consists in subjecting it to the action of steam in a strong iron boiler containing perforated iron shelves. The pressure of the steam is maintained at 50 pounds on the square inch for some hours. The water of the condensed steam is run off at the bottom, and the rendered lard is obtained floating on the top. The steam is carried by a pipe from the steam boiler into the trying cylinder or kettle.

C. E. S., of Minn.—The best paint for steam boilers with which we are acquainted, is composed of equal parts of black lead and red oxyd of iron, mixed with boiled linseed oil.

E. W., of Conn.—Kerosene, or coal oil, is not generally understood to be explosive. All explosive burning fluids contain alcohol. Such fluids must be vaporized, and mixed with eight volumes of air before they will explode when ignited. Some burning fluids sold under the name of kerosene oil may contain alcohol, but they are a fraud upon the community.

J. J. O'S., of Tenn.—Some persons who have been rendered insensible by a weak stroke of lightning have recovered by a plentiful application of cold water; but a powerful stroke of lightning destroys life. We have never known a case of poisoning by prussic acid in which the acetate of potash and common salt in solution proved a perfect antidote.

L. A. O., of N. Y.—Not a particle of proof has ever been adduced to show that nitric acid produced by lightning during thunder storms is the cause of sweet milk becoming sour.

B. N. B., of Pa.—Cast iron is bronzed with a varnish and common bronze powder, which you can purchase at any paint store.

W. D. B., of Pa.—To describe to you the whole process of treating catechu, from the time it leaves the forest till manufactured into all kinds of articles for which it is used, would require too much space for our correspondence column. Articles on this subject have been published in the Sci. Am. from time to time for the last ten years. We would refer you to back volumes.

L. W. N., of Mass.—The government fee for an extension of a patent is $40.

J. A., of Mass.—We have examined the drawings and specification of your cable-laying apparatus in Newton's Journal, and find that it differs essentially from Mr. Berdan's or the apparatus on board the *Agamemnon* and *Niagara*, inasmuch as your paying-out rollers and their carriage move altogether with an increased strain, which seems to make it less simple and effective.

H. C., of N. Y.—You can procure a mill adapted to grinding bones from James Bogardus, this city.

E. H., of Mass.—If you steep your hoops in a liquor of the sulphate of copper, made by dissolving 1 pound of the sulphate to every 30 gallons of water, they will be protected against dry rot, and from the attack of worms.

R. P. M., of N. Y.—Your communication is received, and will appear in our next number.

J. G., of Mass.—We shall be glad to examine the model of your proposed improvement in plows. We quite agree with you that perfection has not been reached even in the old familiar subject of plows.

H. W. D., of Mass.—We do not believe any of the railroad companies in this city have ever offered a prize for a brake to be used on their small cars.

B. C. Morrison, of St. Anthony, Minn., wishes to purchase a machine for turning and pointing common pickets for fences.

B. S., of N. Y.—You inquire if "a coil spring used for the purpose of straining saws can be patented." We reply, it cannot; such springs have been used for this purpose.

J. B., of Ill.—For such information as you want in reference to the tunnage of American and British vessels, address editors of Hunt's Merchants' Magazine. We cannot furnish it.

B. C. M., of Minn.—Some assert that the reason why a bar of cold pig iron is kept afloat in the molten metal is in consequence of an electric repulsion between the molten and solid metal. Others assert that this occurs because the metal is heavier in a fluid than in a solid state. It is difficult to determine which of these two theories is correct.

J. B. L., of Pa.—Making the knobs for fastening carriage curtains of wood, instead of silver, or other metal, is not new. If such a change of material were new it would not be patentable, as its adoption does not either involve invention, or produce the new and beneficial result required in the few cases where the simple change of material justifies the issue of a patent.

H. W., of Pa.—The application of a known device to accomplish a well-known result, in the form you suggest, is not, of course, patentable.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, June 19, 1858 :—

J. H. W., of Wis., $30; B. & Du F., of Wis., $25; S. G., of N. Y., $28; J. D. F., of Mass., $30; P. & D., of N. Y., $30; J. D. T., of Ohio, $25; F. B., of Vt., $55; H. K., of Ind., $30; J. H., of Mass., $25; P. T. B., of Ill., $30; G. H., of N. Y., $30; A. J. C., of Tenn., $25; W. R. W., of Mass., $30; O. R. B., of N. Y., $10; J. N. L., of N. Y., $30; A. A., of Vt., $30; L. A. G., of Mass., $27; F. & B., of Wis., $30; C. H. R., of Me., $20; P. P. T., of Vt., $25; L. W., of Mich., $30; F. G., of L. I., $30; H. C. W., of Mass., $25; W. J. B., of L. I., $30; A. M. H., of N. Y., $30; J. J. S., of Mass., $30; E. S., Jr., of N. Y., $25; J. A., of Pa., $22; W. H. R., of Fla., $150; J. P. K., of L. I., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, June 19, 1858 :—

L. A. G., of Mass.; A. J. C., of Tenn. G. H., of N. Y.; P. T. B., of Ill.; E. S., Jr., of N. Y.; A. A., of Vt.; J. D. T., of Ohio; B. & Du F., of Wis.; A. C. R., of R. I.; J. A., of Pa.; H. K., of Ind.; J. P. K., of L. I.; H. C. W., of Mass.; S. G., of N. Y.; J. H., of Mass.; P. P. T., of Vt.

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PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and date of patent when known, and enclosing $1 as fee for copying.

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Yours, very truly, CHAS. MASON.

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Science and Art.

New Coal Fields.

It may be known to many of our readers that the coal of England occurs chiefly in the north and western portions of the island, and south and south-eastern portions have hitherto been supposed to be quite barren of this fuel. It has always been supposed that there is no coal within eighty miles of London, where the average price is $5 per tun, and the great East and West India mail steamship station of Southampton, is a long distance from coal. This idea seems likely to be dispelled by some facts communicated to the Royal Society by R. Godwin-Austin, who has shown that in all probability there is coal under the strata called the "London Basin." Should this be the case, it will greatly increase the steamship trade of the south of England, and be the greatest boon to the inhabitants of the largest city in the world.

New Plan for Connecting New York and Brooklyn.

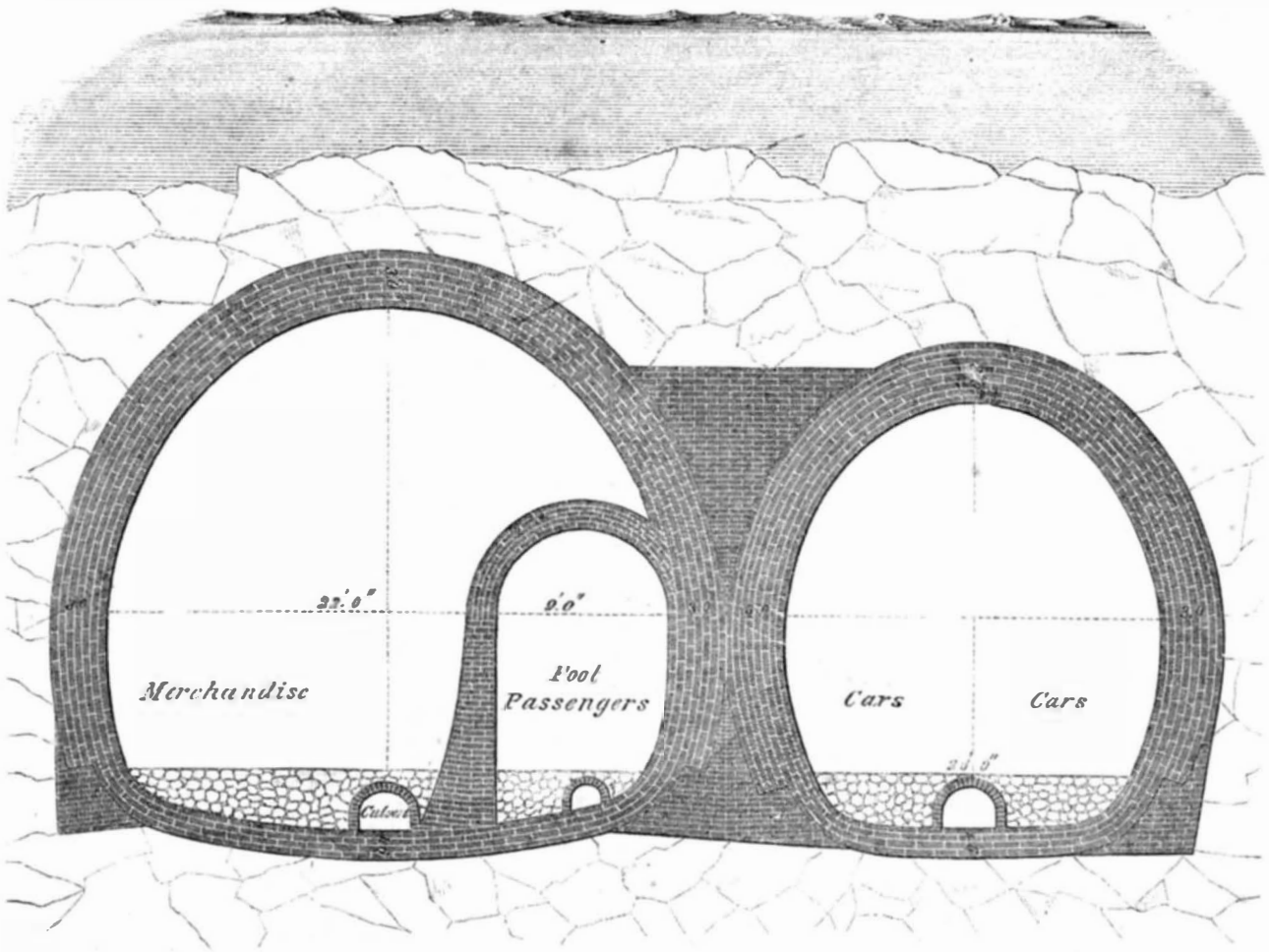
Owing to the enormous increase in the population of the city of New York and Brooklyn, and the constant and extensive intercourse between the two cities, it will soon become imperative on the citizens to provide for the conveyance of passengers and goods by other means than the present, for after the lapse of a very brief period of time, the number of inhabitants will extend to such an overwhelming degree that, let the ferry companies adopt what measures they can command to meet the public requirements, their efforts will be futile, and life will be in imminent and perpetual danger. Bridges cannot be erected without impeding the navigation of the river, and it therefore becomes a duty to adopt the only means left us, namely, substituting quite as complete, quite as safe, and a much more pleasant mode of communication. The object of the proposed undertaking is to construct a line of communication under the East river by means of a tunnel, between the cities of New York and Brooklyn, from the foot of Fulton street to a point immediately opposite, or any other part of the river that may be considered most suitable for the public welfare; to promote a more secure, more speedy, and more comfortable mode of transit for passengers traveling between these two places; to remove all liabilities to accidents from intense fog, dark nights, and fearful collisions from floating ice, and all other casualties attendant upon the present mode of traffic by steamers during the winter months; and also to provide for the conveyance of the public in such a way that the immense population of New York and Brooklyn (no matter to what extent increased) shall be relieved from all dangers, difficulties, and delays in going to either place at every hour of the day or night.

The tunnel should be so constructed that there would be a separate entrance for goods and passengers by cars, and also there should be a passage way for those who preferred walking through, partitioned off by strong walls and buttresses (as in our engraving) from the merchandize road. The merchandize road should be well paved, and laid on concrete, on the left hand side of the foot passengers way, of sufficient width to allow all carts and vehicles of every description a quick passage through.

The cars should be propelled by stationary engines, so that all annoyance from condensed steam and noise would be avoided, and the tunnel should be well lighted with gas. The distance could be run in two minutes.

The geological formation of the bed of the river, and that part through which the tunnel would pass, is mostly rock, and very little difficulty would therefore be encountered in the excavation to admit the brick work, so that the whole distance could be completed and opened to the public in eighteen months from the commencement. The width of the merchandize road should be twenty-two feet in the clear; width for foot passengers, nine feet in the clear; width for cars, twenty-six feet; thickness of the brickwork in arches and side walls, three feet, set in cement; thickness of inverts, eighteen inches, and between the two arches there should be a spandrell wall about eight feet high from the springing of arches the entire length, which has been provided for in the accompaning estimate. Also, the ingress and egress of passengers and goods would be effected by side entrances at any point to be determined upon, the cost of which is provided for in the accompanying estimate.

BECKER'S PLAN FOR CONNECTING NEW YORK AND BROOKLYN.



By the adoption of this mode of traveling, the greatest boon would be conferred; passengers would be relieved from all the dangers of collision, or any other of the accidents so liable to occur on the water. During the progress of the construction of the works, there need not be the slightest impediment to the navigation of the river or any other kind of traffic. The soil excavated from the tunnel could be removed by barges to any place determined upon. Annexed is a full estimate of the cost of such works, including the purchase of rolling stock, wear and depreciation, and every expense and outlay for working cars, maintenance of track, &c., showing a profit of 25 per cent per annum for the entire amount disbursed, and leaving a residue of $4,987 19 yearly.

COST OF CONSTRUCTION OF TUNNEL.

From Fulton Ferry to Brooklyn, 731 lineal yards of excavation and brickwork, at $411 75 per yard,		$300,989 25
Side entrances for cars, goods, passengers, &c., excavation and brickwork, 810 lineal yards, at $209 per yard,		169,290 00
Sinking two shafts on either side to remain permanent, 25 feet in diameter, excavation, 574 cubic yards, at 50 cents,	$287 00	
Brickwork, including all materials, 193 cubic yards, at $1 75,	337 75	624 75
Culvert through center of each tunnel for drainage, 731 cubic yards, at $1 25,		913 75
Rails for double track, 50 lbs. per yard, 65.25 tuns, at $60 per tun,		3,915 00
Merchandise road paved throughout and concrete bottom, 731 lineal yards, at $5,		3,655 00
Longitudinal timbers, continuous bearings for track, 1½ cubic feet per yard forward for double track, 4,386 cubic feet, at 20 cents,		877 20
Transverse ties in every two yards lineal, 548.25 cubic feet, at 20 cents,		109 65
Screws, fang bolts, joint plates, screws in rails, one every foot, 2,924—fang bolts, 1,168, joint plates, 1,752—total, 5,844, at 6 cents,		350 64
Construction of permanent track, 34 chains, at $40,		1,360 00
Extra work, contingencies,		5,000 00
Two stationary engines, 50 horse power each, at $125 per horse,		12,500 00
Four ropes, 1,464 fathoms, at $1 75 per fathom,		2,562 00
Ten passenger cars,		30,040 00
Total cost of construction and rolling stock,		$530,187 24

COST OF WORKING WHEN FINISHED.

Consumption of coal yearly, 730 tuns, at $7,	$5,110 00
Engine drivers and firemen per year,	7,000 00
Oil, grease, cotton waste, contingencies, &c., yearly,	500 00
Keeping paved road in repair, yearly,	410 00
Maintenance of double track, yearly,	525 00
Wear and tear, rolling stock, machinery, yearly,	862 00
Depreciation of engines, rolling stock, yearly, 10 per cent on original outlay,	4,254 00
Gas, 549 lights, at $20 per light yearly,	10,980 00
Extras,	4,000 00
Wear and tear, depreciation of rails, fang bolts, screws, timber, &c.,	1,095 00
Total cost of working, yearly, &c., &c.,	$34,736 00

RECEIPTS.

Passenger traffic, yearly, 7,008,000, at 2 cents,	$140,160 00	
Wagons, carts, &c., yearly, 130,400, at 25 cents,	32,600 00	$172,760 00
Deduct working expenses, &c., &c.,		34,736 00
Surplus revenue yearly,		$138,024 00
Twenty-five per cent per annum of cost of construction, maintenance, cost of working rolling stock, &c.,		133,036 81
Balance yearly,		$4,987 19

GUSTAVUS BECKERS, C. E., Blossburg, Pa.

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